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Monthly Message

Nowadays neither the Command in the Armed Forces nor even the physician in civil life gives heed to the serious problems of infection and epidemics which only a comparatively few years ago were the nightmares of their commands. At the dawn of the century for example, mortality from typhoid fever varied between 10 and 30 percent which persisted until the advent of typhoid inoculation just prior to World War I. Even for those who recovered the morbidity and resulting loss of manpower were fantastic.

Scarlet fever. The hospital mortality was 5 to 10 percent in mild epidemics and 20 to 30 percent in severe epidemics.

Measles. In large cities this ranked third in the mortality of the eruptive fevers due chiefly to its pulmonary complications.

Whooping cough. "Taken with its complications, whooping cough must be regarded as a very fatal infection" (Osler's *Principles and Practices of Medicine,* 2d edition, 1895). It was regarded as third among fatal diseases in children in England.

Diphtheria. The mortality was 30 to 50 percent.

Erysipelas. A mortality of 4 to 7 percent.

Cholera. A mortality of 30 to 80 percent varying with epidemics.

Tetanus. The mortality was 80 percent following trauma.

Tuberculosis. In 1900 the death rate was 183.9 per 100 thousand, as against 12.2 per 100 thousand in 1953.

Pneumonia. During my medical school days this disease carried a mortality of 20 to 30 percent; about 65 percent in the aged. Now the mortality is low and the disease itself far less common. The influenza epidemic of 1918 needs no comment with its widespread morbidity and heavy mortality.

Diabetes has been largely conquered through the use of insulin.

Pernicious anemia is now well controlled by the use of liver and vitamin B_{12}.

The "floating hospitals" that were so common in my own medical school days in an attempt to control the infectious diarrhea of infants in the summer are now things of the past, and so also is the fatal diarrhea of infants that was so prevalent each summer.

All of this has occurred within my own lifetime and much of it since World War I. It could all happen again with any let down in our measures of prevention both in sanitary engineering and in medicine and I would bid all of you, lay and professional alike, consider the need of continued constant vigilance.

Frank B. Berry

FRANK B. BERRY, M. D.
Assistant Secretary of Defense
(Health and Medical)

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Foreword

The *United States Armed Forces Medical Journal* is the medium for disseminating information of administrative and professional interest to all medical personnel of the Department of Defense. The Assistant Secretary of Defense (Health and Medical) and the Surgeons General of the several services invite all medical officers, dental officers, Medical Service Corps officers, Nurse Corps officers, and officers of the Veterinary Corps of the Armed Forces, and the medical consultants of the Army, Navy, and Air Force to submit manuscripts for publication in this *Journal.*

FRANK B. BERRY, M. D.,
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UNITED STATES ARMED FORCES
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INTRA-ARTERIAL vs. RAPID INTRAVENOUS BLOOD TRANSFUSIONS

Experiences in a Forward Surgical Hospital in Korea

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YOSHIO SAKO, *Captain, MC, USA*
ALVIN W. BRONWELL, *Captain, MC, USA*

EARLY in the Korean conflict, intra-arterial blood transfusion was used in the resuscitation of hundreds of men critically injured in battle. The resulting impressions of the many surgeons in the theater varied so widely that, after an extensive clinical experience, we initiated a clinical evaluation of transfusion by the intra-arterial route in an attempt to outline the possible indications for the procedure. During the early phase of the study, every patient with severe oligemic shock received an intra-arterial transfusion. Blood was usually transfused into the femoral artery through a 15- or 17-gage needle. The femoral artery was surgically isolated and the surgeon held the needle in the artery during the administration of the blood. A Rochester plastic needle was used in two patients after cutting down on the femoral artery, and in one patient blood was given directly into the aorta through a 17-gage needle during a laparotomy.

The technic of surgically isolating the femoral artery and holding the needle in place during the rapid infusion of blood was feasible. Minimal amounts of blood were given simultaneously by intravenous infusion. The maximum amount of blood normally given intra-arterially was 3,000 cc. though in one patient who received 4,500 cc., intra-arterial transfusion was discontinued as soon as the patient's systolic blood pressure reached 100, and further replacement therapy was given intravenously. No complications occurred from this therapy. When the needle was removed from the artery, any bleeding was readily controlled with a small piece of gelfoam and gentle pressure. The large-

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gage needle, because of its larger lumen, was preferable to the Rochester plastic needle. Unless the surgeon steadied the needle during the pressure transfusion, it would impinge on the wall of the artery and a free flow of blood would be impeded.

RESULTS

After seven patients in severe oligemic shock had been resuscitated by intravenous blood transfusion through multiple veins, the data were assembled. Six patients had received intra-arterial transfusions and seven had received rapid intravenous transfusions. In the clinical evaluation of the patients in the two groups, the degree of shock was comparable. Four patients in the former group and only one in the latter group were admitted with an unobtainable blood pressure. The degree of injury and amount of hemorrhage, however, was greater in those receiving blood intravenously, and the amount of blood required for resuscitation was slightly higher. The data on these patients are summarized in tables 1 and 2.

There was no appreciable difference in the rate at which blood was given to patients; via artery it was 88 cc. per minute and via vein, 70 cc. per minute. No attempt was made to achieve an absolute maximum rate of infusion by either method. These data represented the actual accomplishments of blood replacement at one forward surgical hospital in a small, comparable series of patients in deep oligemic shock. In one moribund patient not included in this series, a definite attempt was made to determine how rapidly blood could be infused by the intravenous route. In 30 minutes 5,500 cc. of blood were injected into two veins through 15-gage needles; 3,500 cc. of the blood were pumped into one vein in 21 minutes. This demonstrated that blood can be given very rapidly by the intravenous route.

After the controlled use of intra-arterial transfusion in six patients, it was our belief that the patients did not show any appreciably improved response as compared with patients who received blood at a comparable rate through multiple, intravenous routes.

DISCUSSION

Proponents of the belief that intra-arterial transfusion is superior to intravenous transfusion in the treatment of hemorrhagic shock have cited the following reasons to account for its supposed superiority:[1] (1) blood given intra-arterially increases the coronary and cerebral arterial flow; (2) direct infusion into the arterial tree causes an instantaneous rise due to the simple hydrostatic effect; (3) blood given intravenously would tend to pool, whereas intra-arterial blood readily mixes; and (4) blood

TABLE 1. *Patients receiving intra-arterial blood transfusions*

Patient	Wound	Blood pressure on admission	Time in minutes	Amount of blood (cc.)	Rate per minute (cc.)	Results
1	Multiple, of body; sucking, of chest; traumatic amputation of right hand	0/0	45	3,000	70	Recovered
2	Traumatic amputation of left leg; penetration of right thigh, abdomen, and hand; fracture of clavicle	-	60	4,500	75	Recovered
3	Traumatic amputation of right leg; fracture of radius and humerus; perforation of chest	0/0	35	3,000	86	Died on operating table
4	Penetration of chest and abdomen; perforation of right arm	0/0	30	1,500	50	Recovered
5	Perforation of inferior vena cava; laceration of left kidney; perforation of duodenum	120/80	10	1,500	150	Died 3 1/2 hours following operation
6	Penetration of abdomen and sigmoid colon; laceration of superficial femoral artery; penetration of right leg	0/0	30	3,000 (and 1,500 cc. dextran)	100	Recovered
	Average rate				88	

TABLE 2. *Patients receiving rapid intravenous blood transfusions*

Patient	Wound	Blood pressure on admission	Time in minutes	Amount of blood (cc.)	Rate per minute (cc.)	Results
1	Penetration of abdomen and legs; laceration of common iliac artery; retroperitoneal hematoma	0/0	45	3,000	70	Died on operating table
2	Penetration of thigh; laceration of superficial artery	140/70	60	5,000	83	Recovered
3	Multiple penetrations of right buttocks; compound fractures of sacrum; penetration of rectum; traumatic amputation of right leg	50/30	108	5,000	46	Died
4	Penetration of abdomen and right leg	140/80	15	1,500	100	Recovered
5	Penetration of thorax and abdomen; laceration of spleen	80/40	45	3,000	70	Recovered
6	Traumatic amputation of left thigh; multiple, right leg, right thigh, and left arm	30/?	75	4,000	53	Recovered
	Traumatic amputation of both legs and left hand	90/70	65	5,000	77	Died on first post-operative day
	Average rate				70	

can be administered more rapidly by the intra-arterial route. These four reasons are given as prime factors in the superiority of intra-arterial transfusion over intravenous infusion. At the time most of these statements were made, there was no experimental or clinical evidence to support their contentions.

Recently a number of well-designed experiments were carried out in an attempt to evaluate the role of some of the above-mentioned factors. Kohlstaedt and Page,[1] and Case and associates,[2] studied the effects on coronary flow and arterial pressure following intra-arterial and intravenous infusion of equal magnitude in dogs in oligemic shock for varying periods of time. They were able to show in repeated experiments that coronary flow and arterial pressures responded just as rapidly and to the same extent with either intravenous or intra-arterial blood transfusions. In addition, the right and left auricular and pulmonary artery pressures were measured and found to be the same during both types of transfusion. Their conclusion was that their data did not constitute a contraindication to intra-arterial blood transfusion, but that there was no convincing evidence that it was superior to intravenous blood transfusion.

Patients in shock may not have a discernible vein suitable for giving infusions, but if by surgical means the same search is made to locate a vein as an artery, it could be found. Moreover, when necessary, the femoral vein is always available for cannulation. The statement that blood can be administered more rapidly by the intra-arterial than by the intravenous route is not true. Case and associates in summarizing their findings stated that the rate of administration is a function of the pressure in the bottle, pressure in the vessel, resistance to the flow of blood in the needle and tubing, and the viscosity of blood. Under these circumstances, blood can be administered more rapidly through the intravenous route. Another statement frequently made is that blood administered by the intravenous route will produce cardiac failure. There is evidence to show that this is so only after the blood pressure has returned to normal or when there is an underlying cardiac disease. The contention that direct infusion into the artery at rates as currently practiced will cause a rise in pressure due to hydrostatic effect has not been substantiated. Maloney and co-workers[3] gave rapid infusions of blood, both intravenously and intra-arterially, and measured cardiac output by the blue-dye injection method. They also measured mean arterial pressure on a series of normal dogs and on dogs in shock due to hemorrhage; they were unable to demonstrate any difference in the rise in arterial pressure by transfusion through either route. Case and associates cited other experimental work along the same line of investigation indicating that an animal in oli-

gemic shock did not respond more favorably to intra-arterial blood transfusion than to intravenous blood transfusion. The volumes of blood concerned when transposed from the rate of a dog to that of a man were in the realm of 445 cc. per minute; this rate is much higher than the rates given in a clinical operation.

Richards and Hansen[4] also studied the comparative action of intra-arterial and intravenous transfusion in the treatment of oligemic shock. They found no demonstrable advantage of intra-arterial over intravenous transfusion when equal infusion rates were used. They stated that rapid intravenous transfusion was well tolerated, particularly when vessels were in a collapsed state due to hemorrhage. They concluded that this was logical because the blood flow to and from the heart per minute is many times the volume of blood which can be forced into the circulation by any type of pressure of transfusion in a similar length of time. Prior to their experimental work, statements regarding the advantages of intra-arterial transfusion over the intravenous route were made without being substantiated by clinical or laboratory experiments.

A situation in which intra-arterial transfusion may be indicated is in the resuscitation of a patient whose heart is in asystole, because once the output of blood from the left ventricle has ceased, there is no other way for the blood to get into the arterial tree. Another situation would be the sudden need for massive transfusion during an operation for mitral stenosis to get blood into the arterial tree. Except for these two unusual circumstances, most of us believe that there are certain disadvantages associated with the process of intra-arterial transfusion. Cases have been reported of arterial insufficiency necessitating amputation of an extremity,[5] tissue necrosis, arterial spasm caused by arterial cannulation, and in some instances a delay in getting the blood infused because of additional time required to begin the intra-arterial transfusion. A major criticism by most investigators on the work of those who present the advantages of intra-arterial transfusion over intravenous transfusion is that their clinical as well as experimental investigations have not dealt with comparable rates of infusion of blood.[2-4] In some instances conclusions were based on patients in whom four times as much blood was given by the intra-arterial route as was given to others by the intravenous route.

Because the impressions gained from patients in whom blood was given primarily by the intra-arterial route coincided clinically with the above experimental data, intra-arterial transfusions were discontinued in favor of rapid intravenous infusion of blood through multiple, large-gage needles or intravenous cannulas.

CONCLUSIONS

No definite conclusions can be drawn from this very limited experience. Our impressions were that blood given by the intra-arterial route was of no more value in the resuscitation of patients in deep oligemic shock than was blood administered by the intravenous route, if it was given at the same rate. In one forward surgical hospital, it was observed that blood replacement in a small series of similarly severely wounded patients was accomplished as rapidly by multiple intravenous routes as it was by the intra-arterial route.

SUMMARY

The clinical evaluation of intra-arterial blood transfusions administered to six patients who were wounded in combat was compared to the results obtained by rapid intravenous transfusions given to seven men who also were combat casualties. The average rate of blood given intra-arterially was 88 cc. per minute, and intravenously, 70 cc. per minute. These were actual rates at which blood was given and not the maximum rates possible. There was no discernible difference in the rate of response between the patients who received blood intra-arterially and intravenously.

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A NEW LABEL FOR AN OLD ACQUAINTANCE

The official journal of The Association of Military Surgeons of the United States, known since 1901 as *The Military Surgeon,* on 1 January 1955, became *Military Medicine.* This new title more accurately identifies the nature of the publication, whereas its previous name often resulted in the misconception that the articles were limited to the field of surgery. Volumes of the monthly issues will be continued in sequence, the January 1955 issue being number 1 of volume 116.

COMPARISON OF HUMAN AND SHEEP BLOOD AGAR IN DETECTING STREPTOCOCCUS

Observations in Acute Tonsillitis and Pharyngitis

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DONALD E. WRIGHT, *Second Lieutenant, USAF (MSC)*
PAUL R. JONES, *Staff Sergeant, USAF*

IN A STUDY of the causative organisms of tonsillitis and pharyngitis in patients admitted to this hospital, observations were first made on, and data collected from, 135 men admitted with these conditions in the three-month period from September through November 1953.

In general, the hospitalized patients displayed exudate, marked fever, or toxicity. Bacterial cultures were performed on admission by streaking a pharyngeal swab over human blood agar plates.

> These plates were prepared by using donor blood which had reached the expiration date, usually three to four weeks. Fifteen cubic centimeters of blood, containing 0.035 gram of dextrose, 0.031 gram of sodium citrate, and 0.011 gram of citric acid as anticoagulant, were added to 250 cc. of media consisting of 2.5 grams of bacto-tryptose, 0.75 gram of bacto-beef extract, 1.25 grams of sodium chloride, 4.25 grams of bacto-agar, and distilled water.

Streptococcus viridans or *Streptococcus pyogenes* was usually obtained. The following is the frequency of occurrence of each organism: *Str. pyogenes,* 51; *Str. viridans,* 40; *Str. pyogenes* and *Str. viridans,* 26; *Diplococcus pneumoniae,* 9; nonhemolytic streptococci, 5; and *Micrococcus pyogenes,* 4.

Str. pyogenes was found in a total of 77 instances. There was little difference in those showing various bacteria in regard to fever, exudate, glandular enlargement, or duration of illness.

It was then suggested[1] that sheep blood be substituted for human blood in preparation of plates. Sheep blood plates were accordingly prepared similarly to the human plates, except that the blood was fresh, and 135 cultures were obtained from consecutive adult male patients admitted with acute tonsillitis and pharyngitis in an 11-week period beginning in February 1954.

From U. S. Air Force Hospital, Ellsworth Air Force Base, S. Dak. Dr. Nuessle is now at the Dakota Clinic, Fargo, N. Dak.

Str. pyogenes was obtained in every instance. This organism predominated in all but 13 cultures when only scattered colonies were found. It was at times associated with *Str. viridans* and in six instances with *M. pyogenes*.

To determine the difference between human and sheep blood agar plates in detecting *Str. pyogenes,* throat swabs from each of 20 patients were streaked on both types of medium. Only 10 of the 20 human blood plates showed *Str. pyogenes,* but the sheep blood plates revealed it in every instance. In each of the two series, the colonies were limited or scattered in three instances. In the 10 remaining human plates, *Str. viridans* predominated in nine and *D. pneumoniae* in one.

Throat cultures on sheep blood agar were then obtained in 14 unselected personnel from the hospital kitchen. *Str. pyogenes* was found on 13 plates. It was the predominant organism in five. None of these five persons admitted respiratory symptoms, though three of the eight others with streptococci did.

CLINICAL CONSIDERATIONS

Clinical comparison of the 135 subjects tested on human blood agar (group 1) and those on sheep blood agar (group 2) revealed no essential difference. The age distribution, presence of exudate, degree and duration of fever, total and differential white blood cell count, presence of tonsillar hypertrophy or cervical node enlargement, and duration of hospitalization were very similar in both groups. This suggests that clinically, at any rate, there was no significant difference in the infection present in the two groups, which makes the bacteriologic findings (on the two types of blood agar) more pertinent.

Antibiotic therapy usually consisted of 360 mg. (600,000 units) of penicillin procaine daily. Another antibiotic was used when patients were allergic to penicillin or when penicillin had been unsuccessful as outpatient therapy. During hospitalization, it was believed necessary to change from penicillin to another antibiotic in eight patients from group 1 and in 13 from group 2. Penicillin sensitivity was the reason for change in three cases from each group. In the other 15 who had more than one antibiotic, response to penicillin was considered satisfactory.

Marked gastrointestinal symptoms, including nausea, vomiting, and diarrhea, were present in 15 of the total of 270 patients. Bronchitis and sinusitis were common. Herpes simplex was present in 16 of the 135 patients in group 2.

The average stay in the hospital was four days. Twenty-nine patients were hospitalized 10 days or more. Twenty-four of these had a complicating disease.

DISCUSSION

Str. pyogenes was found in a larger number of patients on streaked sheep blood agar plates than on human blood. Sheep blood is recommended by some[2-4] in culturing streptococci. Feller and others[2] and Feller and Stevens[4] found sheep blood agar a reliable means of detecting group A streptococci.

There is some question whether the patients reported had true streptococcus disease. Leukocytosis, exudation, and rising antistreptolysin titers are considered reliable indexes of streptococcus infection.[5-9] Routine antistreptolysin titers were not performed in the reported patients. Initial high titers have been reported in most instances of streptococcus infection in an endemic area.[10] About five percent of the people of a community harbor group A streptococci;[6] however, such carriers of streptococci usually show only a small number of organisms on culture.[11] The same authors found that true streptococcus infection with antibody response in convalescence frequently produced a predominant growth of *Str. pyogenes* on throat culture. It is likely that in endemic areas a large proportion of apparently healthy persons harbor streptococci. A recent report[12] indicated that 90 percent of 53 patients with streptoccus infection harbored the organism three months after the illness. Studies here indicate that 13 of 14 men (93 percent) working in the hospital kitchen showed *Str. pyogenes* on throat culture.

It is possible that some of the difference in hemolysis on human and sheep blood represents a human error. Recent workers[4] have emphasized that classification of hemolytic streptococci from surface colonies was an arbitrary decision between the alpha-prime and beta varieties. A more reasonable explanation for the apparent deficiency in hemolysis on human blood agar is the presence of an inhibiting factor in the blood. Antistreptolysin could be such a factor. Our human blood was obtained from donors who lived in this apparently endemic streptococcus area. Antistreptolysin-O titers were performed on four patients from the surgical service whose history revealed no recent infection. Titers were 100, 125, and (in two), 250 Todd units. Values of 250 units have been considered significant.[5] When antistreptolysin titers were performed on four patients with recent pharyngitis, two were 166 and 250, and two were greater than 333 units. It is likely that many persons have high titers of antistreptolysin here, such as was reported at another endemic area.[10]

SUMMARY AND CONCLUSIONS

Cultures from 135 hospitalized military men with acute tonsillitis and pharyngitis were streaked on human blood agar. *Str.*

pyogenes was found in 77 cultures. One hundred thirty-five subsequent patients with sore throats had cultures performed on sheep blood agar. *Str. pyogenes,* the predominant organism in 122 was found in every instance. The clinical findings in the two groups were essentially the same. In 20 patients from the second group, cultures were made on both human and sheep blood. *Str. pyogenes* was present on 10 of the human blood agar plates, and on all 20 of the sheep blood plates.

It is suggested that there may be a factor in human blood which inhibits growth and hemolysis of *Str. pyogenes*. This theoretically, could be antistreptolysin, which is apparently present in high titrations in the blood of persons from endemic streptococcus disease areas.

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The editor who works over a poor manuscript can make it fairly presentable, but it never hides the lack of talent completely, It is like trying to hide a day's growth of beard with talcum powder. You cannot do it. It may look all right at a distance, but when you get up close, the beard shows through.

—HUGH H. HUSSEY, M. D.
in GP, p. 62, Dec. 1954

CLINICAL ASPECTS OF HYSTERIA

JACK C. WESTMAN, *Lieutenant (junior grade) (MC) USNR*

HYSTERIA is of interest to all physicians because it is a psychiatric syndrome touching each field of medicine. In the older psychiatric literature hysteria was thought to be an illness occurring primarily in women, but military experience has revealed that it is not uncommon in men. Davis and Blick,[1] for example, found that 18 percent of 1,218 psychoneurotic servicemen presented symptoms of hysteria.

When an organic cause cannot be found, a complaint is often suspected of being of psychogenic origin and is sometimes erroneously believed to be due to hysteria. Because physical complaints without structural basis are typically found in other psychiatric conditions, further investigation is necessary in order to establish the diagnosis of hysteria. Somatic symptoms are commonly associated with anxiety reactions, depression, and schizophrenia. For example, a headache for which no organic cause can be found may be a manifestation of an underlying schizophrenic process; chest pain may be one facet of an anxiety state, and, in middle-aged persons, a depression may present itself primarily through somatic complaints.

In the modern psychiatric nomenclature the word "hysteria" has been supplanted by the term "conversion reaction" or "conversion hysteria." Most psychiatrists now believe that the dissociative phenomena of amnesia, fugue, somnambulism, and multiple personality, previously considered forms of hysteria, are qualitatively distinct from conversion hysteria.[2]

The conversion reaction includes somatic symptoms involving the voluntary neuromuscular and sensory perceptive systems. Paralysis, tic, tremor, and aphonia illustrate the former; anesthesia, paresthesia, pain, deafness, and visual defect are examples of the latter. In essence, the conversion symptom presents itself as an alteration in function of a part of the body innervated by the voluntary nervous system. Study of this syndrome has revealed a group of salient features which are typical of the reaction type.

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MANIFESTATIONS OF HYSTERIA

The conversion symptom usually appears in a person with a predisposing personality pattern, commonly known as the "hysterical personality."[3] The life history of the patient frequently reveals the following character traits: emotional instability, vivid fantasy life, morbid desire for sympathy, egocentricity, and suggestibility. In other words, he appears to be generally "emotionally immature and superficial," although he may show excellence in intellectual spheres. Proficiency in dramatics and a tendency toward exhibitionism are often encountered. This type of person has been described as possessing strong dependency needs and as tending to lean on a stronger person, like a child on a parent.

A second characteristic is that the symptom has a symbolic meaning for the patient. Often it may be related to his previous experience with illness. It may represent a past event in his life, symbolize a distasteful impulse, or be directly acquired from an illness of another person. This factor operates on an unconscious level, obscure from the patient's awareness.

Another important feature is that the symptom may be an elaboration of an already existing organic defect This point emphasizes the need for an exhaustive physical examination as a necessary first step in establishing the diagnosis of conversion reaction.

The symptom does not comply with anatomic fact and is related to the patient's knowledge of medicine and anatomy. A person sophisticated in medical matters may present symptoms that are difficult to differentiate from organic disease. This is particularly true with patients who have had frequent physical examinations.

The patient is often relatively indifferent toward his symptom. This attitude has been characterized by Janet[4] as "la belle indifference." It leads to the frequent finding that the patient is comparatively free from anxiety while he possesses the symptom, illustrating that the symptom literally "drains off" or encapsulates his anxiety. A corollary to this observation lies in the fact that many patients become extremely anxious when their symptom is abruptly removed. Herein exists the danger in the premature alleviation of a conversion symptom.

The acute presenting symptom usually follows a stressful situation which may be elicited by inquiry into the circumstances surrounding the onset of the illness. Often the patients are vague and appear to have a memory loss for these facts; however, persistent history-taking is fruitful in almost every case. It is clear

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that the symptom offers an escape from a painful, anxiety-producing circumstance.[5]

The last point is that a background of sexual inadequacy is a frequent finding and is often dynamically related to the origin of the conversion symptom. Hippocrates was not far from the truth when he implicated a wandering uterus as a causative factor in illnesses that he termed hysterical. In women a rejection of sexual function is frequently manifested as frigidity. In men a basically feminine orientation is often observed, especially in the sense of rejection of an aggressive, masculine role.

The foregoing principles may be advantageously illustrated by the following case presentations.

CASE REPORTS

Case 1. A 21-year-old marine was hospitalized because of paralysis and pain involving his left arm. His illness began six weeks prior to admission when he first noticed pain in his left upper arm under the metal buckle of his gun strap while on the rifle range during basic training. The discomfort extended to the medial aspect of his forearm and was characterized by several remissions and exacerbations. On returning from leave at his home, one week prior to admission, he woke in the morning with total paralysis of the left arm.

Family history disclosed that the patient was the fourth of six siblings, and that he relied heavily for advice and counsel on an older sister. For six years his father had paralysis of his right leg of unknown cause, initially displaying symptoms similar to those presented by the patient. During the patient's leave, his father suffered from a heart attack. His mother worked in order to support her family and invalid husband. She was the dominating figure in the home. A paternal uncle also had paralysis of a lower extremity, and another uncle was a chronic invalid throughout most of his life. Personal history revealed that the patient finished college at the age of 19, graduating with distinction. Throughout his scholastic career he had furnished some degree of financial support to his family, while actively participating in extracurricular activities. At the age of five his left arm was injured in a washing machine roller, and thereafter he considered that extremity to be weaker than the right. He exhibited little interest in heterosocial activities.

This patient's case illustrates the development of a conversion paralysis similar to his father's affliction, elaborated from an underlying median neuropathy in an extremity which had been injured during childhood. A previous history of academic excellence was present. Emotional reliance on an older sister illustrated his basic immaturity and dependency. In response to the stress of Marine Corps basic training and separation from home, he reacted with functional incapacity consistent with his

passive orientation. When his symptom was removed by suggestion, the patient began to have typical hyperventilation attacks and other manifestations of "free-floating" anxiety. His symptoms were ultimately alleviated when he was separated from military service.

Case 2. A 27-year-old naval enlisted man was hospitalized because of paralysis of the left side of his body associated with dramatic complaints of "drawing" and pain of three days' duration. His symptoms developed following threats of injury to him made by a fellow seaman.

Family history disclosed that the patient was the youngest of four children. He claimed to be the passive recipient of abuse and rejection by his siblings. He was closely attached to his mother, who died one year previously following a cerebrovascular accident causing left hemiplegia. His father died from cirrhosis of the liver and chronic alcoholism. Throughout his life the patient leaned upon other persons, helplessness characterizing his relationships with them. He was avid in religious affairs, aspiring to be a minister or a radio actor. His psychosexual adjustment was inadequate, and he had divorced and remarried his wife.

Here again a predisposing personality pattern of immaturity was elicited, and previous experience with a similar syndrome in his mother was present. A pattern of sexual inadequacy and a precipitating stressful situation were found. In response to threats of injury to himself, the patient reacted with fear of death from a stroke like that of his mother's, probably stemming from his lifelong feminine orientation which may have been a result of contacts with a weak, alcoholic father and a domineering mother.

DISCUSSION

Essential to the concept of hysteria is the fact that a conversion symptom provides an indirect but effective method of manipulating the patient's environment. Thus in women recurrent abdominal pain may conveniently excuse a wife from marital relations and furnish a means of expressing hostility toward her husband. Not infrequently posttraumatic disability remains refractory to treatment until compensation matters have been settled. In unpleasant military situations aphonia offers a means of escape to less threatening surroundings. The secondary gain inherent in the conversion symptom often appears to be more adequately described as primary gain, especially in military practice; however, study of most cases reveals that symptom production operates on an unconscious level. The symptom usually is only a manifestation of a more pervasive illness.

A thorough physical examination is a prerequisite to establishing the diagnosis of conversion reaction. Psychiatric study

should disclose the purpose and symbolic meaning of the symptom in addition to the presence of hysterical personality traits. The diagnosis cannot be made on the basis of either physical or psychiatric examination alone. Occasionally the true diagnosis is overlooked because of physical signs associated with the conversion symptom. When present, these signs are clearly secondary to loss of function. Examples are disuse atrophy, edema, and alterations in skin temperature and color following conversion paralysis.

Treatment of the conversion reaction is directed toward the underlying personality structure through intensive psychotherapy. Removal of the presenting symptom by employing suggestion enhanced by any of a number of physical agents is usually a comparatively simple matter. When used with suggestion, barbiturate narcosis, hypnosis, and carbon dioxide inhalations are of value. The important point is that the patient should be allowed to part with his symptom gracefully.

SUMMARY

A symptom without demonstrable organic basis may be a manifestation of several psychiatric illnesses. It represents a conversion reaction when it presents an alteration in function of part of the body innervated by the voluntary nervous system and when it serves an unconscious purpose for the patient. Typical features of the conversion reaction are: (1) predisposing "hysterical personality;" (2) symbolic meaning of the symptom; (3) possibility of the symptom being an elaboration of organic defect; (4) disparity between findings and anatomic fact; (5) relative indifference of patient toward symptom; (6) production of symptom by stressful situation; and (7) background of sexual inadequacy.

Treatment includes psychotherapy directed toward those underlying personality traits which lead to the production of symptoms. The removal of the presenting symptom may be accomplished by suggestion enhanced by pharmacological agents or hypnosis.

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RIP CORD FOR EMERGENCY RELEASE OF IMMOBILIZED MANDIBLE

KIMBLE A. TRAEGER, *Lieutenant (DC) USN*

IT IS generally agreed that when maxillofacial fractures are adequately treated during the first 24 hours after injury the results are notably better than those obtained after delayed treatment. In patients with facial fractures who require intermaxillary fixation, immediate treatment is frequently delayed because of the danger of asphyxiation due to vomiting. This danger is particularly great in patients having a full complement of teeth; with the teeth fixed in occlusion it would be virtually impossible to expectorate vomitus.

In military operations it is often necessary to transport patients for long distances. "Air evacuation has been used efficiently in Korea, and the air evacuation airplane will play an increasingly important role in military planning operations and successes."[1] Unfortunately, airsickness is occasionally encountered during flight and is one of the most important problems in aviation medicine. It is a constant threat and hazard to the patient with intermaxillary fixation.

"Airsickness may be defined as a condition occurring principally as a result of accelerations in aircraft flight which is marked by nausea, vomiting, instinctive fear, pallor, sweating, vertigo, and prostration. . . . It may require several hours for an attack to reach the vomiting stage but in some instances it has been observed that a case will progress from normal to violent nausea and vomiting within a few seconds."[2] This condition is normally self-limited, but vomiting could prove disastrous to the patient with intermaxillary fixation. The effectiveness of various drugs for the prophylaxis of motion sickness has been investigated, but the exact mechanism by which protection against motion sickness is achieved is not known, and no completely satisfactory drug is now available.[3]

Should nausea occur during air evacuation, even the patient equipped with scissors or wire cutters would have considerable difficulty removing the fixation in order to open his mouth. The time required to remove intermaxillary fixation depends largely on the type used. When instruments are readily available, and under

From U. S. Naval Hospital, San Diego, Calif.

ideal conditions, trained personnel can remove an intermaxillary elastic or wire fixation in a few seconds. During various stages of evacuation, however, neither the desired instruments nor the personnel may be available. Scissors or wire cutters, even when given to the patient, are frequently lost or misplaced.

EVALUATION OF EXISTING METHODS

A preliminary study was done under ideal conditions to determine about how long it would take to remove a few common types of intermaxillary fixation. Four patients were selected and the

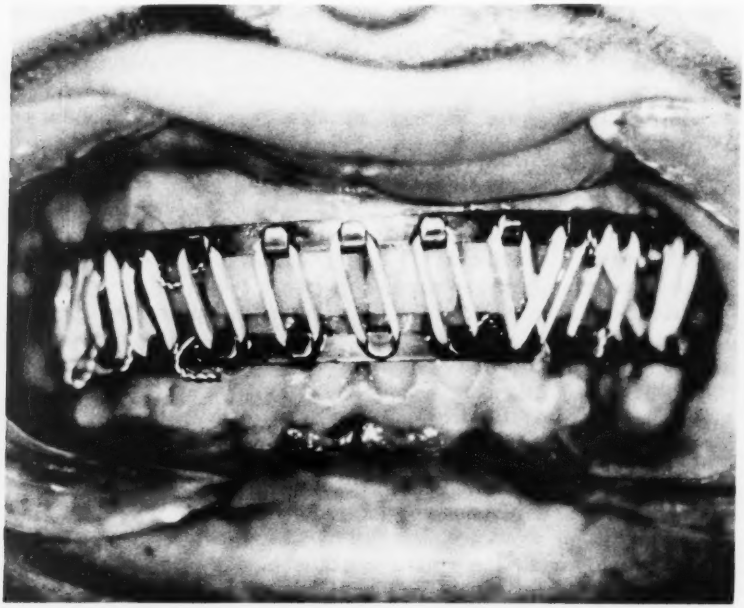

Figure 1. Intermaxillary elastics applied to mandibular and maxillary arch bars.

time to remove their fixation was determined. A nurse with 17 years' experience in nursing was asked to remove the fixation for a patient as quickly as possible so that he could open his mouth. The patient had intermaxillary elastics applied to mandibular and maxillary arch bars (fig. 1). The patient was seated in the dental chair and good lighting was used. The nurse required 45 seconds to remove the fixation so that the patient could open his mouth.

A dental intern with no experience in the treatment of fractures was asked to remove the fixation of another patient. This patient had two intermaxillary wires in addition to intermaxillary

elastics attached to mandibular and maxillary arch bars (fig. 2). The time required for the dental intern to remove the intermaxillary fixation was 42 seconds.

A third patient had three intermaxillary elastics attached to bicuspid Ivy wire loops on the right side, and a single intermaxillary wire on the left side (fig. 3). The patient was given crown and bridge scissors, placed in front of a wall mirror, and told to cut the wire and rubber bands so that he could open his mouth as quickly as possible. He required five seconds to cut the elastics and an additional 21 seconds to cut the single wire.

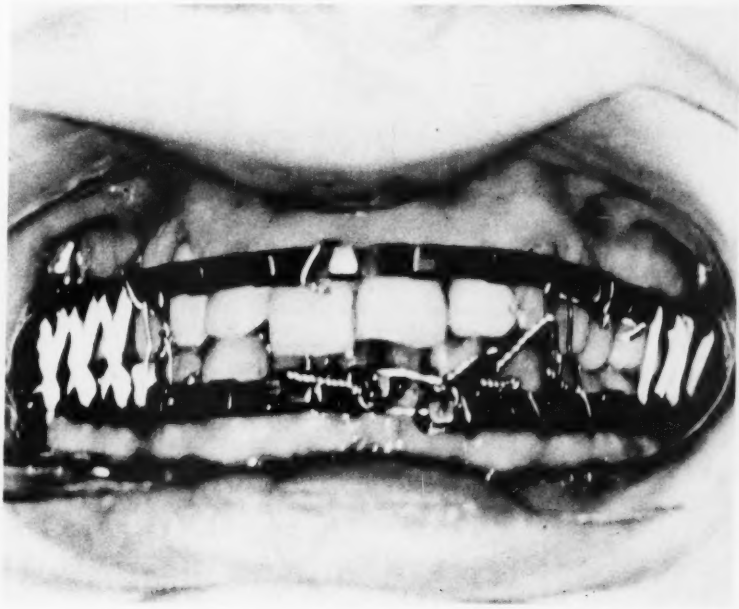

Figure 2. Two intermaxillary wires in addition to intermaxillary elastics.

A fourth patient had Gilmer-type wire fixation attached to the four bicuspid teeth (fig. 4). This patient, though using crown and bridge scissors of the type frequently given patients with intermaxillary fixation, was unable to cut a single wire. A trained dental technician, using wire cutters, cut the fixation in 13 seconds.

A NEW METHOD

A method for simple, quick removal of intermaxillary fixation was therefore desired. One method, similar to the cotter key method,[4] and found to be satisfactory, makes use of a 20-gage hypodermic needle as a "rip cord." Such a rip cord arrangement

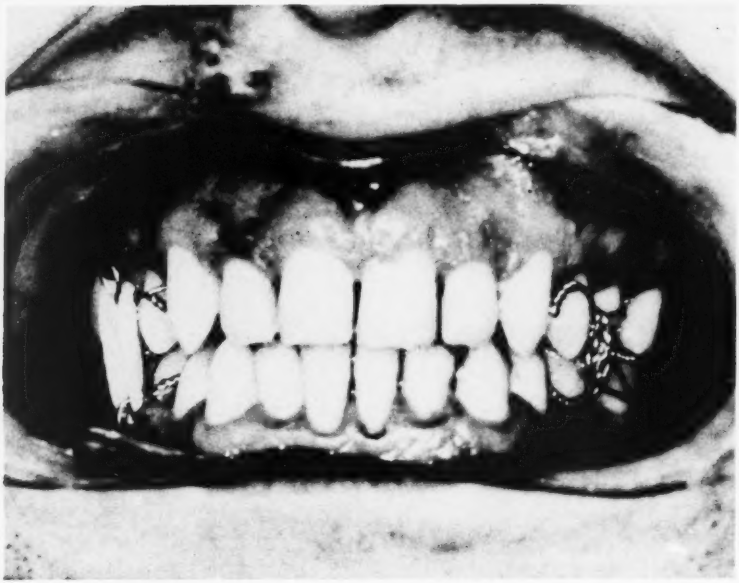

Figure 3. Intermaxillary fixation of three elastics on the right side and a single intermaxillary wire on the left side.

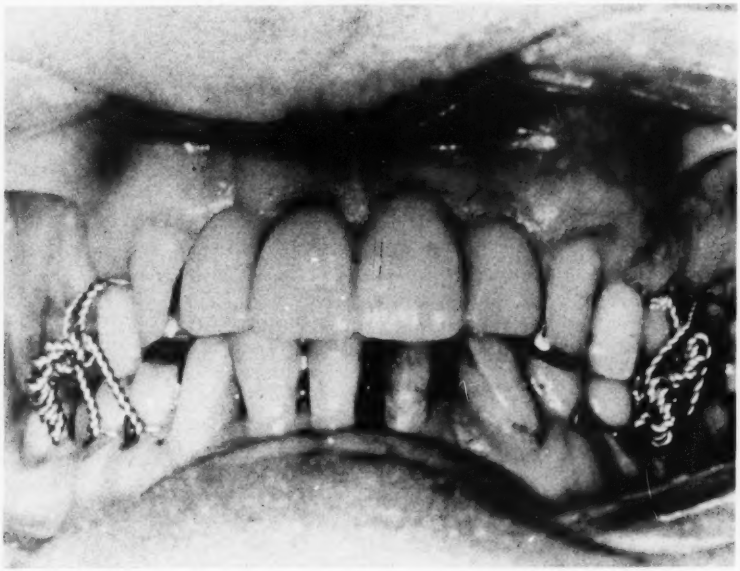

Figure 4. A Gilmer-type wire fixation.

not only provides satisfactory fixation during the period in which vomiting is an acute hazard, but also makes it possible for the patient to remove the fixation and open his mouth in a few seconds.

The principle in the application of the rip cord involves traction applied to needles held parallel to the occlusal plane of the

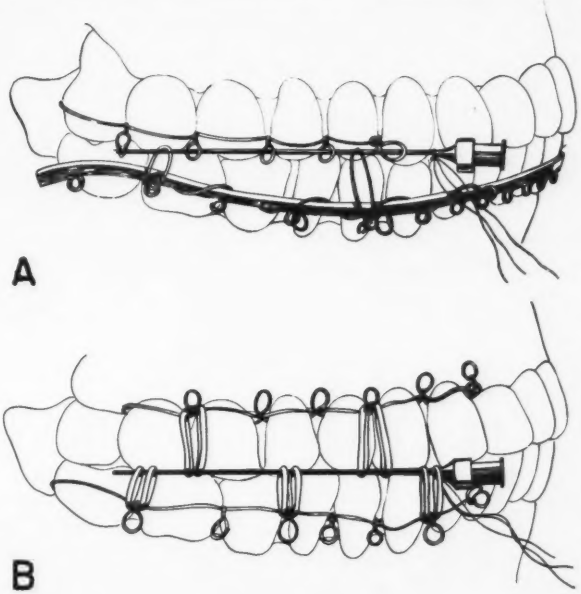

Figure 5. A rip cord used with (A) *intermaxillary wire, and* (B) *elastic traction.*

teeth, instead of directly to teeth in the opposite arch. When the needles are removed, this intermaxillary traction is released and the patient is able to open his mouth.

PROCEDURE

There are a number of combinations of wiring and fixation appliances to which the rip cord principle could be applied. The method works very well in patients having an arch bar attached to one arch and wire loops placed on the teeth of the opposing arch. The points are removed from two 20-gage hypodermic needles and the ends made blunt and harmless to tissues. The needles are then inserted through the wire loops, one needle to each side. The teeth are brought into occlusion. Wires are attached to the arch bar, brought around the needles, and tightened. A cord or heavy dental floss is secured to the hub of the

needles and allowed to hang from the patient's mouth. When the cords are pulled the needles slip from between the wires, enabling the patient to open his mouth (fig. 5A).

If elastic traction is used the elastics are placed first from one arch to the other in the usual manner. A needle is then placed between the buccal tissue and the elastics. The elastics are then alternately removed from one arch, bringing the elastics over the needle, and attached to the opposite arch (figs. 5B and 6).

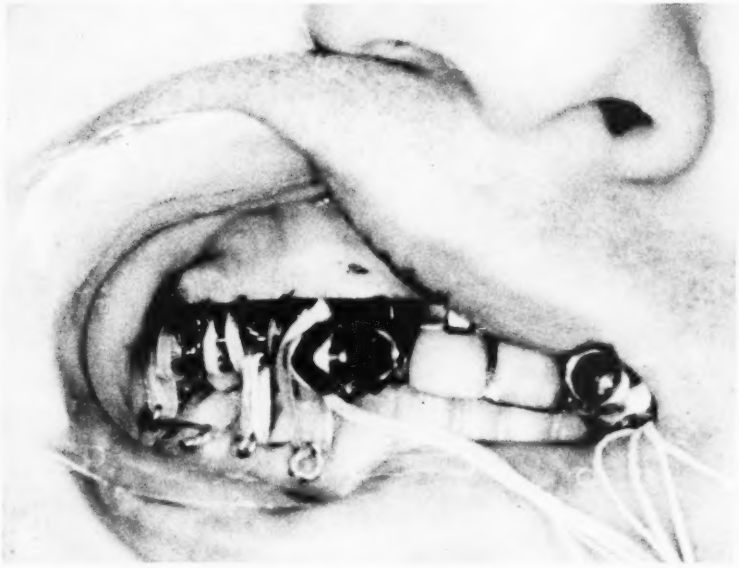

Figure 6. Intermaxillary elastic fixation utilizing the rip cord for emergency release of immobilization.

The minor inconvenience of the needles is well tolerated by the patient when he realizes that because of them he will be able to open his mouth promptly if necessary. The patient should thoroughly understand the reasons for the use of such an appliance and be instructed not to remove the needles except in an emergency.

While serving with the First Marine Division in Korea, I used the rip cord type of fixation on seven patients. Prior to their being transferred each patient was asked to pull the rip cords to be sure of proper function. When wire fixation was used the patients were able to pull the rip cords and open the mouth in what seemed to be a fraction of a second. A somewhat more vigorous pull was required to remove the fixation when elastics

were used. In no case, however, was more than five seconds required to remove the fixation and open the mouth.

SUMMARY AND CONCLUSIONS

Because air evacuation of casualties is becoming more and more the transportation method of choice, it is increasingly necessary to consider the problems of nausea and regurgitation occasioned by motion sickness in patients with immobilized jaws.

It is evident that in the event of motion sickness and nausea even trained personnel require a dangerously long period of time to relieve immobilized jaws. Every precaution must be taken to provide opportunity for the earliest possible release of immobilization appliances in these emergencies. The device described herein, a 20-gage hypodermic needle used as a "rip cord" in the manner of a cotter key, allows satisfactory fixation and provides the patient with a simple, quick method of removing the fixation if necessary.

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ESOPHAGEAL SPEECH FOLLOWING LARYNGECTOMY

A person confronted with the advice of laryngectomy is naturally disturbed, not only by the knowledge that he has cancer but also by the fact that the only means of successful treatment entails loss of his voice forever. How will he be able to work and communicate with his family and friends? This is so upsetting that not infrequently the patient is anxious to seek another form of treatment even though the chance of cure be less. Fear of loss of the voice has too frequently caused a patient to accept less than he needed in treatment and has influenced a physician toward conservatism later to be regretted. Laryngectomy is not to be feared to that degree, inasmuch as useful and adequate vocal rehabilitation may be attained in a few weeks with a little work. Esophageal speech can be learned readily by anyone who can swallow and belch under control.

—NORMAN JESBERG, M. D.
in *California Medicine,*
p. 80, Feb. 1954

CIRCUMCISION OF THE NEWBORN INFANT IN THE DELIVERY ROOM

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EDWARD M. MOSS, *Lieutenant (MC) USNR*

IN THE past 24 months about 2,400 newborn infants have been circumcised in the delivery room of this hospital prior to transfer to the nursery. Hovsepian[1] and Miller and Snyder[2] reported a similar policy with satisfactory results.

During the past decade the unprecedented and progressive increase in the birth rate and the nationwide demand for hospital maternity care, together with the shortage of beds and nurses, have created serious professional and administrative hospital problems. The expansion of large central maternity nurseries with overcrowding and an inadequate number of attendants has increased the hazard of infection. Just as many of these factors have served to give impetus to the practice of early ambulation of post-partum and surgical patients, they have of necessity caused a reconsideration and evaluation of many previously established and static practices. We altered our practices, where possible, to keep our patient census at a minimum, decrease the hazards of infection, and conserve the time of our personnel.

The increased demand for circumcision of the newborn by the vast majority of parents posed many problems for all members of the medical and nursing staff. The period of hospitalization for normal post-partum patients and newborn infants was variable, usually three to six days, depending upon the availability of beds. This created a problem in the scheduling of circumcision 24 hours previous to the mother's discharge. If the mother had to be discharged earlier than anticipated, a last-minute surgical procedure would be necessary before leaving the hospital or else a return trip to the outpatient department at a later date by both the mother and the infant. This resulted in undue hardship because many of our patients lived beyond a 50-mile radius.

In addition to the scheduling difficulties, nursery and other personnel expended considerably more time in the preparation of circumcision packs and assisting in the procedure. Furthermore, the medical officer assigned to perform the circumcision would of necessity invade the already crowded nursery or the

From U. S. Naval Hospital, San Diego, Calif.

patient would be transported to and from the nursery to the selected surgical suite. The medical officer would be required to prepare both himself and the patient for the operation and any unavoidable delay in his arrival by other urgent duties would only entail loss of valuable time for his assistants.

Study of the problem suggested the practicability of early neonatal or delivery-room circumcision as a partial solution, *i. e.*, to conserve time for the medical officer and nursery staff and to simultaneously minimize the dangers of infection by decreasing traffic to and from the nursery.

PROCEDURE

The simplicity of this method is noteworthy. Upon hospital admission the expectant mother signs an operative permit, provided she desires circumcision in the event she delivers a male infant. When circumstances demand hurried transfer to the delivery room, signature is readily obtained post partum, because from 30 to 45 mg. of piperocaine hydrochloride (metycaine) is usually administered for saddle-block anesthesia. The attending obstetrician then performs the circumcision after the cord is ligated and after it is determined that the infant is a normal, healthy male.

The infant is transferred to the accessory table used originally for the sterile drapes and towels required for delivery. The infant may be strapped to a circumcision board or held by an attendant. (We have favored the latter method.) The corpsman or other attending assistant extends his hands and arms beneath the sterile drape and above the table to hold the legs in slight flexion and moderately abducted. The previous aseptic management of the newborn infant dispenses with the need for either skin preparation or sterile drapes for the operative field. Either the Gomco clamp technic or dissection and amputation of the foreskin is performed, a choice entirely dependent on the method preferred by the attending physician. Either method takes but a few minutes. The Gomco clamp procedure was used in about 80 percent of our patients and dissection in the remainder. The results obtained have been uniformly excellent. There have been no cases of infection in this series, nor have there been any cases of excessive bleeding, which occasionally occurs when the procedure is done on the fourth or fifth day of life.

If, for any reason, any distress is present, the operation is deferred until a later date. Also, if it is the opinion of the attending physician that circumcision is contraindicated because the infant was slow to breathe normally or cry lustily, the procedure is deferred until a later date. Other conditions of deferment are: prematurity, evidence of developmental defects, and potential erythroblastosis fetalis.

The number of circumcisions done in the nursery on the fourth day of life is now less than three percent of the total circumcisions done. This figure does not include the premature infants.

It is not the purpose of this article to discuss the advisability or nonadvisability of performing a circumcision. This has been discussed many times previously and the literature is filled with articles both pro and con. The majority of the parents of our newborn male infants requested that circumcision be done.

We believe that this procedure is of value for the following reasons:

1. Conservation of valuable time for the medical officer and the nursing staff because of (1) availability of the infant; (2) avoidance of need for additional sterile pack setup; (3) avoidance of need for skin preparation and draping of the operative field; (4) employment of only delivery-room personnel during the period of immobilization associated with post-partum observation of the mother; (5) avoidance of the surgeon's preparation for the operation; and (6) lack of demand upon nursery personnel for assistance in the operation.

2. It decreases the number of personnel entering the nursery who are not intimately associated with the care of the newborn infant. This decreases the possibilities of introducing infecting organisms into the nursery.

3. Reduction in the possibility of hemorrhage.

Grossman and associates[3] collected data on 21 normal newborn infants which revealed that whole blood clotting time during the first six hours of life ranged from seven to 38 minutes with an average of 14 minutes. On the third day they found that the clotting time was 10 to 60 minutes with an average of 25 minutes, and on the fifth day of life it ranged from six to 38 minutes with an average of 16 minutes. The platelet values of their patients were all within the adult normal limits. The prothrombin concentration showed a wide variation of patterns, typically high on the first day, low on the third day, and high on the fifth. Grossman[4] studied the prothrombin level by the Quick method and noted a drop in the normal level after the first 24 hours of life which did not rise until the third day. Smith[5] summarized several contributions regarding hemorrhagic diseases of the newborn infant and noted the normal prothrombin level at birth. This level then fell for the first three days of life and did not return to normal until the seventh or eighth day of life. Sturgis[6] likewise showed that the prothrombin level of umbilical cord blood at birth is not again achieved until the seventh day of life. Waddell and Guerry[7] showed that prothrombin deficiencies most commonly occur between the ages of 48 and 72 hours. The systolic blood pressure increases from 60 mm. Hg at birth to 80 mm. Hg at the end of the first week.[8]

4. The infant is observed by trained nursery personnel during the postoperative period. This results in early detection of infection with resultant early therapy if occasion demands.

5. The mother is spared the concern over an open wound because the circumcision is healed by the date of discharge; thus an important factor in parental anxiety is eliminated.

SUMMARY

This article describes our experience with 2,400 circumcisions in the newborn infant in the delivery room immediately after birth. The value of this procedure is due to conservation of time for medical officer and nursing staff, and reduction in the possibility of hemorrhage or nursery infection.

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The use of cortisone and ACTH in rheumatoid arthritis, some types of allergy, rheumatic fever, and several other diseases may create an endocrine disturbance in many of the patients. One aspect of endocrine disturbance resulting from the use of these agents is depression of adrenal cortical function. Hence, the anesthesiologist must familiarize himself with the use and abuse of these hormones because it is a fact that patients can reach the operating table, particularly in emergencies and many times in elective surgical operations, without the surgical team realizing some factors that should be known in advance.

—JOHN S. LUNDY, M. D.
in *Anesthesiology,*
p. 376, July 1953

A SIMPLE TECHNIC FOR BRONCHOGRAPHY

DAVID E. THOMAS, *Lieutenant Colonel, MC, USA*

EXPERIENCE at various overseas hospitals has revealed that frequently a patient not eligible for evacuation requires a bronchogram for evaluation. Often there is no one available who is capable of performing the technical aspects of the procedure. Actually, with a minimum of equipment, scrupulous attention to detail, and an appreciation of the hazards involved, any physician can obtain adequate bronchograms.

With this in mind, I believe that a complete description of the routine method of bronchography used at this hospital will serve a worth-while purpose. Its advantages are that (1) a minimum of equipment is needed; (2) no special otorhinolaryngologic training is required; (3) the procedure can be performed rapidly; and (4) tracheal catheterization is not required.

PROCEDURE

Premedication of adult patient consists of the administration of 0.2 gram of secobarbital (seconal) one hour before appointment, and of .0006 gram of atropine sulfate and .064 gram of codeine sulfate 45 minutes later. Nothing is taken by mouth for at least six hours prior to the procedure, and postural drainage on the ward precedes bronchography.

With the physician protected by two masks and the shield illustrated in figure 1, topical anesthesia is obtained with a two percent solution of cocaine in peppermint water. The oropharynx is first anesthetized by spraying with an atomizer. In this clinic a compressed air atomizer is used, but a hand atomizer is an acceptable substitute. The patient holds his tongue with a four-by-four gauze sponge in the left hand and is instructed to breathe through his mouth. Because the spray will generally cause him to gag, he holds an emesis basin lined with cleansing tissue in which he expectorates, and is supplied with additional tissue with which he wipes his mouth. He is instructed to expectorate, not swallow, the medicament. Spraying is repeated until the throat feels numb. A small cotton sponge dipped in the cocaine solution is then introduced for 10 seconds in each pyriform sinus with the laryngeal forceps. Following this step, the epiglottis is visualized with a laryngeal mirror, a curved malle-

From Fitzsimons Army Hospital, Denver, Colo.

able silver laryngeal cannula on a 3-cc. syringe containing 2 cc. of the cocaine solution is introduced over the epiglottis, and the epiglottis is gently drawn forward by the cannula. This impinges the epiglottis against the back of the tongue and exposes the glottis. The patient is instructed to take a deep breath and, when the vocal cords abduct, the solution is injected. This maneuver commonly stimulates a bout of forceful coughing. This step is repeated twice more. If swabbing of the pharynx with a

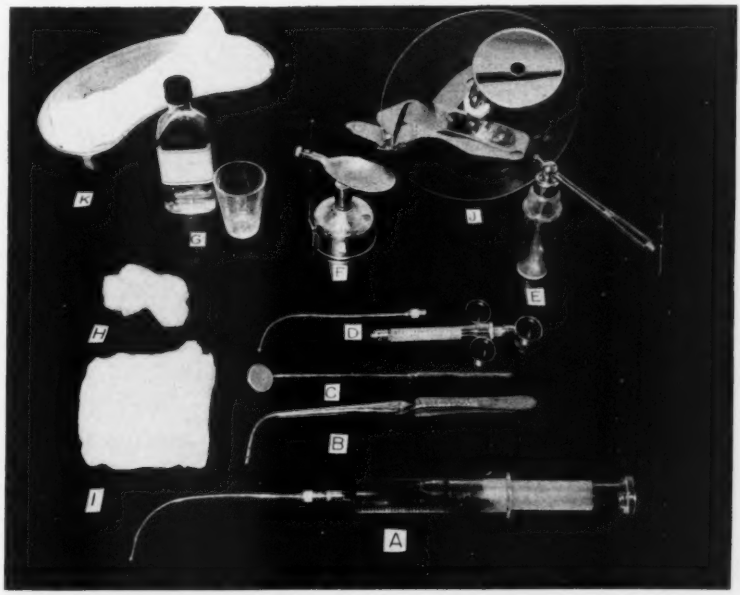

Figure 1. Equipment required for bronchography, available through the Armed Services Catalog of Medical Materiel. (A) Curved laryngeal cannula, 30-cc. syringe, and iodized oil. (B) Laryngeal forceps. (C) Laryngeal mirror. (D) Luer syringe, control 3 cc. (E) Devilbiss air compressor atomizer or medicinal hand atomizer (not shown). (F) Alcohol lamp. (G) Two-percent solution of cocaine hydrochloride, and medicine glass. (H) Cotton swabs. (I) Four-by-four sponges. (J) Head mirror and headband attached to locally procured plastic face protector. (K) Kidney basin with cleansing tissue.

moist sponge indicates that the gag reflex is still present, the spraying procedure is repeated. It should be emphasized that thorough sensory anesthesia is required in order to abolish the cough and gag reflex. As much as 40 cc. of the cocaine solution is sometimes required.

The patient is then placed in a lateral position on an x-ray table which can be tilted. He leans on his elbow on the side to be filled, the head is retracted forward and placed as near the

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vertical position as possible, the chin is tilted upward, and the tongue is drawn forward by an assistant. The patient is instructed to breathe slowly and deeply through his mouth, and under no circumstance to cough or swallow. A laryngeal cannula attached to a 30-cc. syringe containing 25 cc. of a 40 percent solution of lipiodol is placed by feel over the epiglottis. The lipiodol, which has been chilled for two hours in a refrigerator, is injected (fig. 2). It will run through the glottis and trachea to the de-

Figure 2. Injection of lipiodol to outline right bronchial tree.

pendent bronchi. If the patient does not swallow, the injection can be stopped at 15 to 20 cc., depending on the size of the patient.

With the lung containing the lipiodol dependent at all times, the patient is placed on his side on the x-ray tilt table. With assistants holding him in place, the table is tilted almost to the vertical and rapidly returned to the horizontal; this maneuver is repeated twice more with the patient rotated 45 degrees from the initial position, both dorsad and ventrad (fig. 3).

Posteroanterior, lateral, and oblique roentgenograms of the thorax are promptly obtained with the patient standing (fig. 4). If bilateral mapping is desired, the contralateral bronchial tree is injected, lipiodol distributed in an identical manner, and posteroanterior and oblique exposures are obtained.

Postural drainage with tussive squeezing is employed while the films are rapidly developed. If inspection of the films reveals an important area of the bronchial tree not outlined, injection is repeated, the patient is positioned as required to ensure filling of the desired segment, and further films are obtained. This is seldom necessary.

Upon return to the ward, postural drainage with tussive squeezing is repeated for one hour.

Figure 3. Positioning and tilting of the patient to distribute lipiodol.

COMMENT

Many physicians believe that bronchograms obtained without fluoroscopic control of the distribution of lipiodol are inadequate. It must be admitted that, under fluoroscopic visualization, with the use of a catheter through the glottis, it is possible to obtain the desired bronchograms without using as much lipiodol, and the procedure is more specific. I have had excellent results with the outlined procedure, however, and the necessity of repeating bronchograms because of inadequate filling or other

technical deficiencies has been a distinct rarity. Also, the time factor and amount of exposure to roentgen rays are matters worthy of consideration in a clinic with a heavy workload.

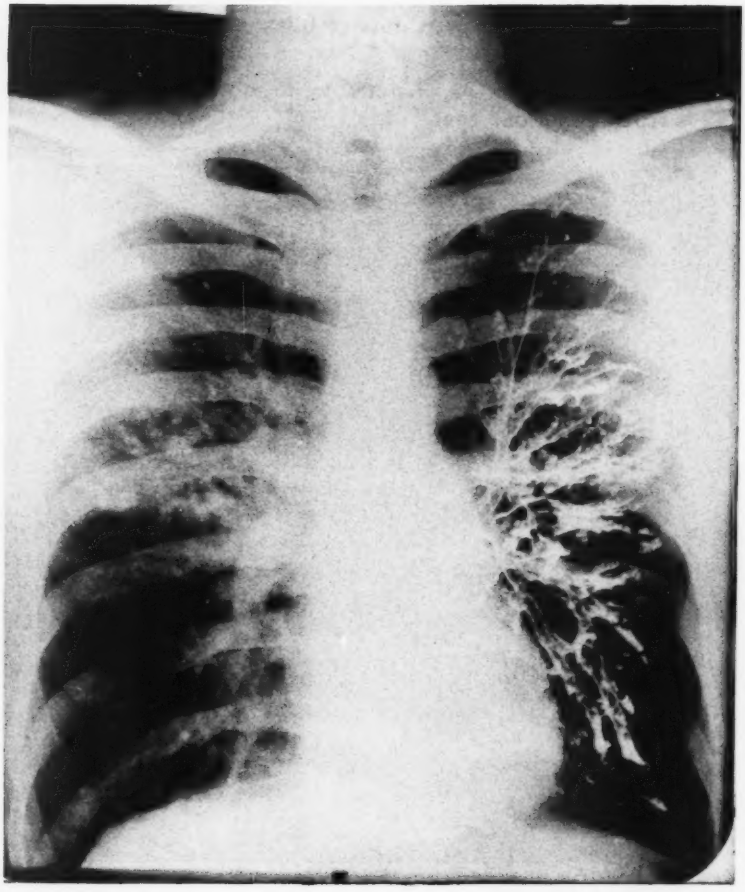

Figure 4. Bronchogram obtained using the described technic. Note extensive bronchiectasis and excellent filling of the upper lobe.

It is realized that up to 40 cc. of a two percent solution of cocaine for anesthesia represents an excessive dose.[1] Over half of this medicament is exhaled in droplet form or expectorated, and the actual amount of cocaine absorbed by the patient is not known. There have been no serious cocaine reactions in the several hundred anesthetizations performed since I have been associated with the endoscopy clinic. No specific therapy has

been required for the few minor reactions which have occurred. A 30-cc. syringe of a 2.5-percent solution of thiopental sodium (pentothal sodium) and sufficient instruments for immediate thoracotomy are kept on hand in case of a major catastrophe. I have had no experience with combining a detergent, glycerin, and a vasoconstrictor with the local anesthetic and applying the mixture by aerosol spray. Miller and co-workers[2] reported that this method greatly reduced the amount of the drug needed for adequate anesthesia.

A tilt table is not an absolute requirement for obtaining good results.[2] Any flat surface tilted to 45 degrees or more, combined with a positioning of the patient so that all segments are filled, will serve the purpose. It should be emphasized that positioning, tilting, and exposing should be done rapidly in order to avoid alveolization. Increasing the viscosity of the lipiodol by chilling is of advantage in this regard.

SUMMARY

A simple method of bronchography described herein can be performed, rapidly and with a minimum of equipment, at remote installations where evacuation is not practical or the indigenous population is being treated. Close attention to the steps of the procedure will result in adequate bronchograms being obtained.

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THE FOREMOST MEDICAL PROBLEM

Although some nations of the world still have pressing problems of communicable disease and life expectancy rates vary from nation to nation, the trend in all nations is to a greatly increased life expectancy—resulting throughout the world, in an aging population. As a result, the foremost medical problem in many parts of the world is no longer the communicable diseases, which claimed their victims with dramatic swiftness, but the slow, insidious processes of the chronic diseases and the disabilities that they leave in their wake.

—HOWARD A. RUSK, M. D.
in *New England Journal of Medicine,*
p. 232, Aug. 6, 1953

PREVENTION OF RECURRENT ORAL VINCENT'S INFECTION

Education of the Patient

THOMAS D. GILSON, *Commander (MC) USNR*

VINCENT'S infection or "trench mouth" long has been a dental problem in the world's military forces. Prinz and Greenbaum[1] have chronologically related the early reports, nearly all of which described outbreaks of the disease in armies. The works of Pindborg[2] and Hester and associates[3] called attention to the continuing problem of the occurrence of this disease in personnel of the armed services; they as well as Schluger[4] believed that the hazard of acquiring this infectious process in its original acute phase is greatly increased while serving on active duty with the military service.

Workers are in general agreement regarding the systemic factors believed to be contributory in the weakening of individual resistance to the invasion of organisms producing the disease. Several of these factors are of such a nature that active duty in the armed services might intensify them to the extent that, other things being equal, this very intensification could account for the preponderance of the disease in persons in the service. The following appear high on many lists of systemic contributory factors: physical exhaustion and emotional tension,[5] general "run-down" condition,[6] and emotional and physical strains,[7] all of which are conditions frequently experienced by servicemen.

It is also generally agreed that, after treatment of the first acute attack of Vincent's infection, in spite of the use of various drugs and repeated thorough cleansing of the gingival crevices by both dentist and patient, there is still a great likelihood of either a recurrence of the acute phase or a retrogression into a subacute or chronic state.[8-10]

Goldman[11] stated: "One of the most important, but least recognized, causes for recurrence is the saucer-shaped interproximal area resulting from a primary attack. The architecture of the interproximal tissues does not allow for the deflection of food during mastication. Thus with the packing of food the crater becomes larger and there is a loss of tissue tone, resulting in reinfection. This condition can only be rectified by surgery."

From Naval Air Station, Whidbey Island, Wash.

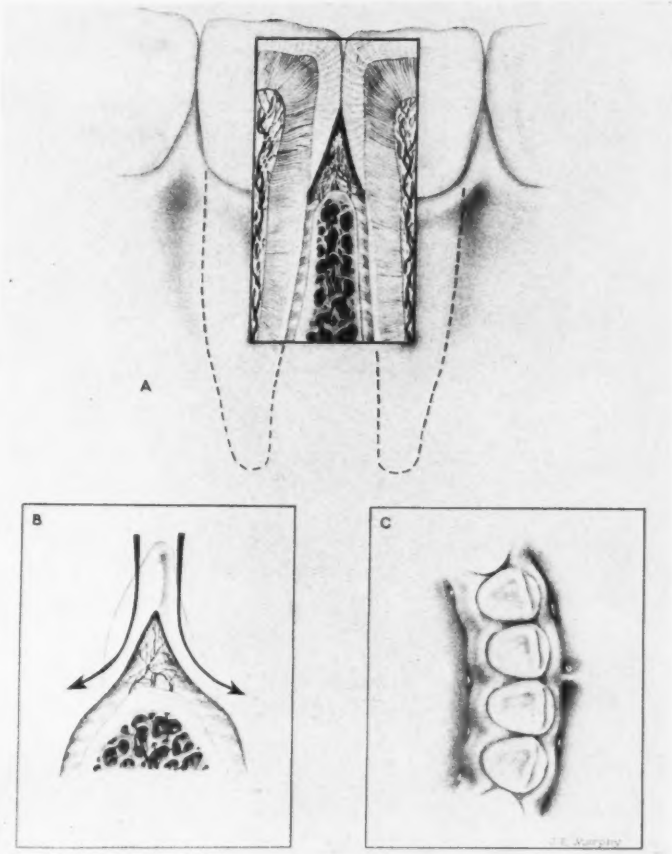

Figure 1. (A) A schematic view of the lower front teeth and gums in a healthy mouth as seen from the front. The cut-away area shows the roots embedded in bone with the overlying gum tissue filling the space between the teeth.

(B) A drawing of the same area as seen from right angles to view (A), or a section between the front teeth. Left, in this drawing, is toward the lip; and right is toward the tongue. The gum again fills the space between the teeth in this drawing and comes to a sharp "peak" up to the point where the teeth touch each other, represented in the drawing by the white oval immediately above the peak.

The arrows indicate the path of food which slips around this contacting point during eating. Notice that the shape of the gum tissue between the teeth is such that food naturally is shed away from this delicate attachment of gum to root, making the area between the teeth relatively self cleansing.

(C) A top view of the lower front teeth.

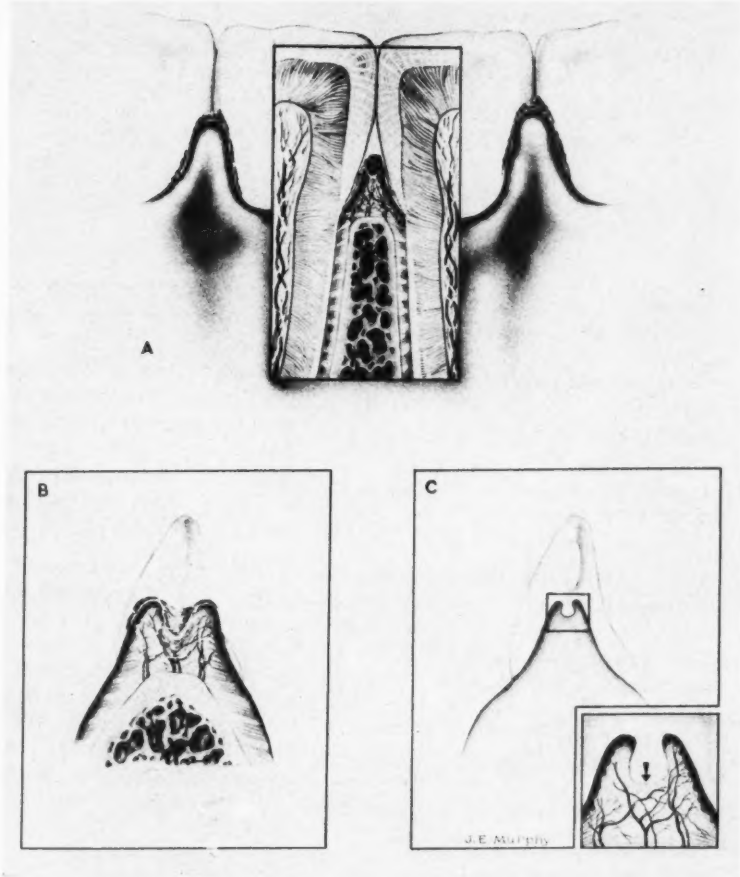

Figure 2. (A) A schematic view similar to figure 1; however, it shows the same area in a condition of acute Vincent's infection or "trench mouth." The mouth is very sore, the gums bleed easily, and the patient has a peculiar "metallic" taste in his mouth at this time. Notice that the germs which cause the disease have eaten away the tip of the "peak" of gum tissue between the teeth, and that the gums are swollen and debris covers the necks of the teeth.

(B) A drawing of this disease process viewed at right angles to (A). Notice again that the point of gum that used to fill the space between the teeth is being eroded away by the action of the disease germs.

After proper treatment of the disease in this acute stage, the gums will heal in a deformed way as seen in drawing (C). The peak of gum tissue which used to fill the space up to the contacting point is changed so that the tip is gone and a "cup-shaped" tissue is present.

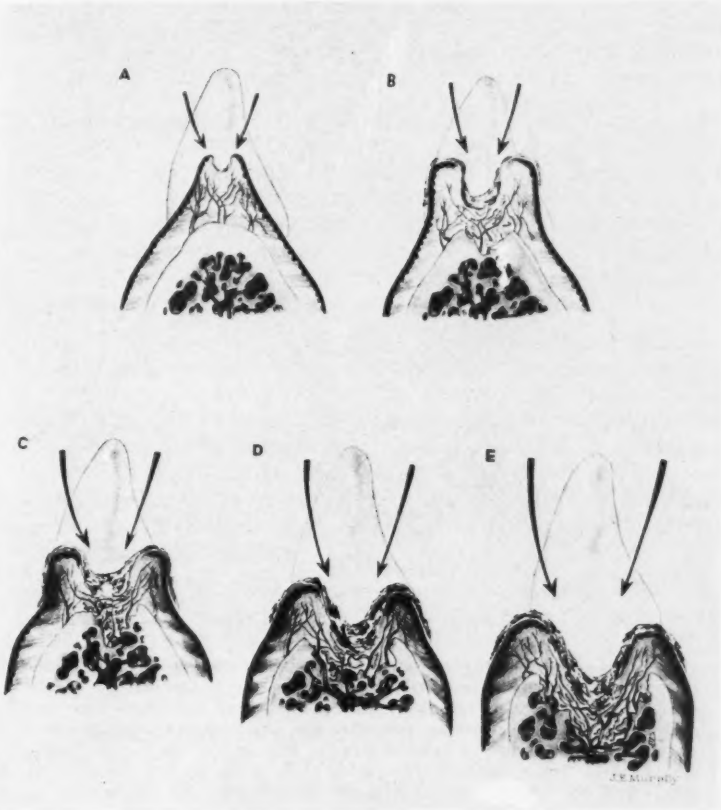

Figure 3. These drawings illustrate the changes in the gums if nothing is done to alter the "cup-shaped" deformity resulting from the acute attack of "trench mouth." The arrows indicate the packing of food into this delicate area each time that it is chewed. This constant packing of food will cause the "cup" to become progressively deeper until the bone is affected. The gums lose their tone, and the chance that the trench mouth germs will again invade the tissues is greatly increased. Either another acute attack with soreness and bleeding will occur, or the disease will go on in a low-grade way gradually destroying the structures with little more discomfort than the packing of food between the teeth will produce.

To prevent either of these forms of relapse from occurring, it is necessary for the patient to care for his mouth in a very particular way for several months. The cup between the teeth *must* be changed into a convex shape again to prevent recurrence of the Vincent's processes, which, if not prevented, will be responsible for the early loss of the patient's teeth.

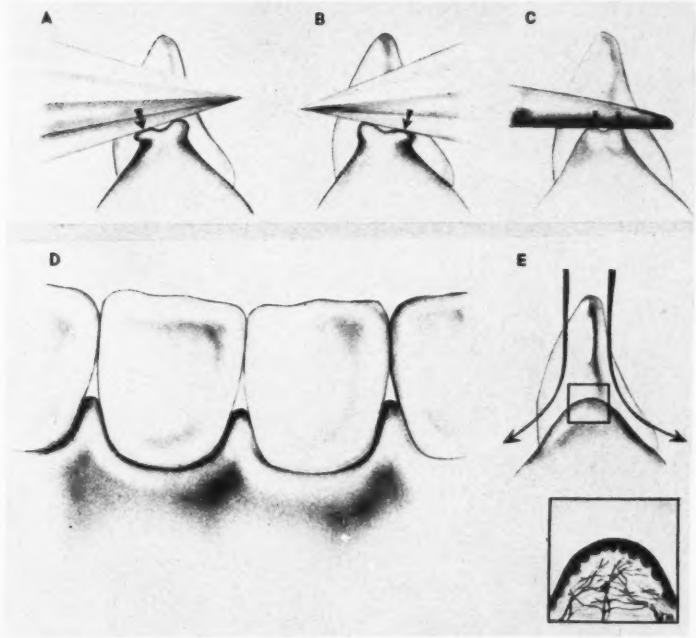

Figure 4. (A) and (B) illustrate how a rubber-tipped interdental stimulator should be introduced daily between the teeth, forcing the "lip of the cup" down, first on the cheek side (A) and then the tongue side (B). This *must* be done repeatedly, day after day, and with sufficient pressure so that, after a period of several months, the lips of the cup will have disappeared. Thirty seconds per day in each of the spaces between the teeth from the cheek side and then likewise from the tongue side is recommended. This will require roughly 30 minutes a day. Many patients read while using the stimulator.

Considerable pressure can be exerted on the lip of the cup with the rubber tip if it is gradually increased over the weeks. This is to be encouraged; the more pressure the better.

(C) illustrates proper after-meals cleansing of the spaces between the teeth with either a round toothpick or a special balsa-wood cleanser which is available at most drug stores. The latter is preferable, because the wood is soft and the shape of the balsa-wood stick is such that to force it into the spaces between the teeth not only removes the food but exerts pressure on the lips of the cup at the same time.

Drawings (D) and (E) picture the gums some months later with a correction of the "cupping" in the spaces between the teeth complete. The "cup" has been changed into a convex shape and food is no longer forcibly scooped into the spaces between the teeth. Thus the hygiene of these areas is much less difficult.

Continuation of the use of the sticks to clean the areas after meals is recommended and the use of the rubber tip daily for somewhat shorter periods is encouraged to keep the gums firm and healthy.

Schaffer's[12,13] work sheds some light on the character of the "saucer" because in several patients who had recovered clinically, biopsies after treatment revealed areas with incomplete epithelial covering and "microscopic breaks still were present."

Supporting Goldman's contention that surgical intervention is necessary to correct the deformity in the embrasures, Eustace[14] laments the unlikelihood of general adoption of such long operative procedures in British armed forces during the war. This possibility is extremely remote in view of the number of cases occurring, and from my observation of the attitude of many dentists in the service such approaches to correction are the task of a periodontist.

Chace[15] stated the problem and offered a solution more compatible with armed services capabilities when he made this observation: "Architecture of the interproximal tissue is seriously changed so that food particles are not deflected during mastication. Food accumulates in the area and the saucer becomes deeper. *If the bone is not affected, proper contour can be usually restored by packing and the (patient's) faithful use of an interdental stimulator*" (italics added). Kerr and Gilson[16] are of the same opinion.

The purpose of the accompanying figures and their legends is to provide convenient material in printed form for making clear to the patient the importance of his role in reshaping the interproximal tissues to prevent recurrence of the Vincent's disease in any form (figs. 1-4).

The patient must be taught (1) to use an interdental stimulator so that he will, over a period of time, produce pressure atrophy of the edges of the saucer on the facial and lingual sides, and (2) to thoroughly cleanse the cervical portion of the embrasure after each meal.

The legends are written in lay language in the hope that the illustrations in the article may serve to educate patients. Verbal explanations with the original drawings have been very encouraging, and patient co-operation in self-care procedures has been greatly enhanced.

SUMMARY

This article presents a short justification and plea for the publication of the accompanying schematic drawings and legends for distribution to dental patients as an aid in the prevention of recurrence of Vincent's infection.

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TREATMENT OF GRIEF

It is only rarely that a doctor is asked to treat a problem in grief. Our therapeutic emollients are uncertain, and tremulously administered. We escape, if we can. Until the signs and symptoms and the natural course of bereavement are more thoughtfully examined we remain unable to help in any plan for a constructive and reasonably happy order of living. Although we may not be able, or even invited to carry through to a cure, doctors may shelter a mind during the first shock of bereavement. Here medicines play a part, and the concept of sedation needs to be cleared. Warnings against barbiturism, now prevalent in lay writing, have become misleading unless the real use of the drug as a temporary stay on an emotional explosion is explained. In a bewildered and depleted person, it is charitable and wise to subdue the mind until thoughts are assembled in a more orderly fashion. Nor does the need for such an interruption constitute a censurable defect in the intellectual structure of a patient. The proper use of sedatives over a period of several weeks may be a real medical contribution.

—THOMAS N. HORAN, M. D.
in *Harper Hospital Bulletin,*
p. 124, May-June 1954

RIFLE-SLING PALSY

HASCALL H. MUNTZ, *Captain, MC, USA*
RALPH W. COONRAD, *Captain, MC, USA*
ROARY A. MURCHISON, *Colonel, MC, USA*

TRANSIENT peripheral nerve palsies as an occupational hazard peculiar to certain military duties have been described in the past. Examples are bombardier's palsy and palsies from pressure of the shoulder pack in infantrymen. This report presents a series of patients with peripheral nerve paresis in the left upper extremity attributed to the use of the rifle sling during basic training (figs. 1-3).

The subjective complaint of the soldier with rifle-sling palsy is often the "stocking-glove" type of anesthesia observed in a hysterical person. In mild cases, a high index of suspicion and obtaining a careful history are necessary to make the diagnosis. The patient with moderately severe symptoms will present sufficient objective neurologic findings on the first examination to confirm the diagnosis.

Early in 1953 three patients reported to the outpatient dispensary with nearly identical complaints of numbness and weakness of the left arm, but gave no history of recent disease nor of other associated systemic symptoms. Neurologic examination other than that limited to the left arm was normal.

A survey of the literature disclosed no previous description of injury due to the use of the rifle sling. Questioning of infantry officers in the training groups was not fruitful in disclosing any known effect of its use on the present or previous groups of trainees. Because of its transient nature and possibly because of its nondescript symptoms, the entity had not been brought to their attention.

Medical officers who had served in basic training camps were questioned and were unaware of any nerve palsy of the upper extremities occurring in trainees; however, brachial plexus palsies of "unknown" cause had been observed.

Once this syndrome was brought to the attention of the dispensary physicians, 18 more patients who had reported to their dispensaries without solicitation were quickly diagnosed and referred to the orthopedic clinic of this hospital.

From U. S. Army Hospital, Camp Chaffee, Ark. Dr. Muntz is now at 938 Hospital Drive, Tyler, Tex.

Figure 1. Rifleman in the prone position. For the sake of clarity the patient's fatigue jacket was removed. It is believed the jacket has a tendency to increase the pressure over the axillary sheath by its natural folding in this region.

These patients had one or more of the following objective findings: (1) Disseminated muscle group paresis involving those muscle groups supplied by radial, ulnar, and median nerves;

Figure 2. Rifleman in the sitting position.

(2) sensory changes involving cutaneous distribution of the radial, ulnar, and median nerves; (3) occasional vascular and/or nerve phenomena manifested by objective and subjective temperature changes; (4) vasomotor instability manifested by skin

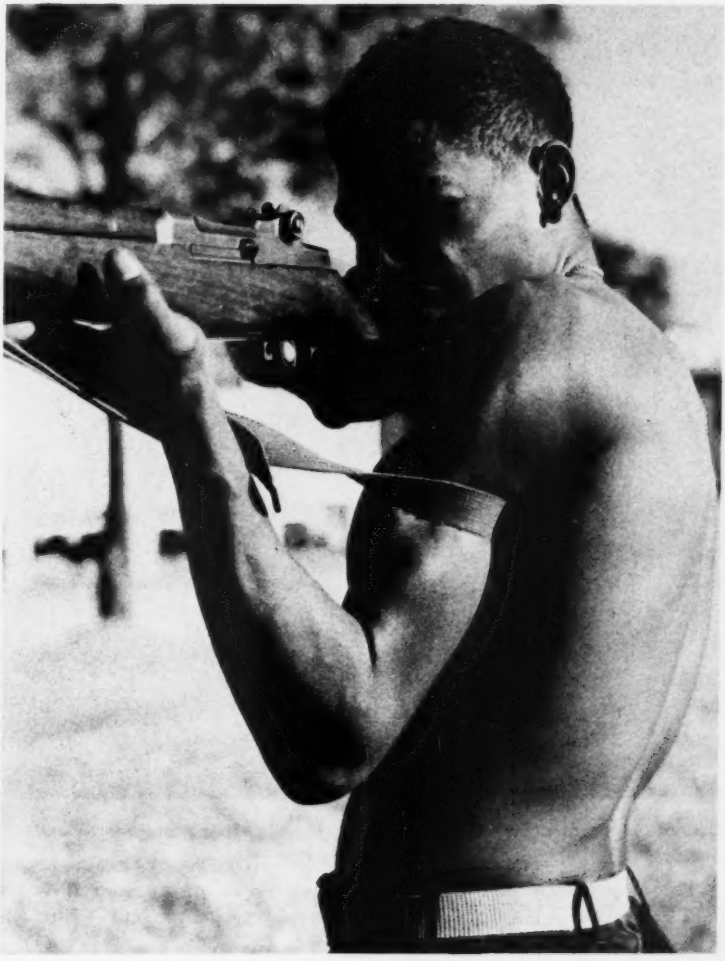

Figure 3. Rifleman in the standing position.

color changes with changes in atmospheric temperature; (5) petechiae; and (6) desquamation of skin at the site of pressure (fig. 4).

At the time of the initial examination the paresis had been present from one day to three weeks. All patients recovered fully.

Figure 4. Appearance of arm after removal of rifle sling. Note desquamation of skin at the site of pressure.

Three patients had complete radial nerve palsy and five had partial palsy involving one or more of the major nerves of the arm (table 1).

Physical findings included well-defined sensory and motor changes of the involved nerves. Because the patients were all right-handed, the upper right extremity was not involved. The sling, applied as illustrated and as described in FM 23-5, Paragraph 87, automatically tightens with continued use. It is well known among firing range instructors that the most important

aid to accuracy is a tight sling. About 500 trainees were observed on the firing line, and many were found to have a cyanotic or blanched, and often pulseless, hand and wrist while firing.

TABLE 1. *Duration of rifle-sling palsy in 18 soldiers from 19 to 21 years of age*

Patient	Nerve involved	Extent of involvement	Time to full recovery (days)
1	Median-ulnar	Partial	21
2	Radial	Complete	3
3	Radial	Partial	5
4	Radial	Complete	2
5	Radial	Partial	7
6	Radial	Partial	12
7	Radial	Partial	2
8	Median-ulnar	Partial	3
9	Radial	Partial	10
10	Median-ulnar	Partial	1
11	Ulnar	Partial	6
12	Radial	Partial	4
13	Radial	Partial	4
14	Radial	Partial	3
15	Median-ulnar-radial	Partial	3
16	Radial	Partial	6
17	Radial	Complete	2
18	Radial-ulnar	Partial	3

The soldier photographed here suffered a severe palsy of all three nerves. He recovered in three weeks and we were able to precipitate palsy with a tight sling again in less than one hour, with three-minute breaks every 10 minutes. Recovery from the second episode was nearly complete in four days.

We examined 488 men, divided into two nearly equal groups, who had been firing four hours on the 1,000-inch range.

Of these, 130 had mild neurologic symptoms consisting of paresthesias. Sixty-one had petechiae and six had definite weakness in the musculature supplied by the radial nerve. These men were examined in groups of about 40 in their barracks four and 10 hours after firing. This was done without previous knowledge of the trainees or their instructors, to rule out the possibility of

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mass suggestion or any change in firing technic in the various platoons. No significant differences in symptoms were found among the various groups.

All patients recovered spontaneously without treatment.

SUMMARY AND CONCLUSIONS

The findings of paresis or total paralysis of one or more nerves of the upper extremity in a basic trainee who recently has been or is on the rifle training course should suggest the possibility of rifle sling palsy.

Prevention may be accomplished by using a fixed loop sling and by frequently loosening the sling when changing clips or examining targets. Recovery may be protracted if this injury is not recognized early.

ADDENDUM: Since this article was written, about 45 more soldiers with this syndrome have been examined.

THE TREATMENT OF LEUKEMIA

The outlook for progress in the treatment of the leukemias would seem to be excellent. Although it appears unlikely that any marked improvement will be achieved in the results obtained by radiotherapy alone, the many new chemotherapeutic agents which have been developed for the treatment of this disease in the past ten years suggest that newer and far better agents will be developed in the near future. The probable avenues of progress in chemotherapy are: (1) the development of new agents with more prolonged therapeutic effect and applicability to a wider spectrum of leukemias; and (2) the prevention of the development of resistance to agents now in use. This latter may be accomplished by a better understanding of the fundamental mechanisms of the development of resistance to various chemotherapeutic agents or by the employment of combination therapy using several chemotherapeutic agents simultaneously, or combined irradiation and chemotherapy in an empiric attempt to prevent the development of such resistance.

—JOSEPH H. BURCHENAL, M. D.
in *Bulletin of the New York Academy of Medicine*,
p. 444, June 1954

MEASUREMENTS AND RECORDING OF JOINT FUNCTION

JOSEPH W. BATCH, *Colonel, MC, USA*

MUCH misunderstanding and confusion exists with respect to joint motion, especially what it comprises and how it can be measured and recorded. This is because of the many methods which have been proposed to measure and record joint motion, without due consideration of the anatomic structure and physiologic function of the part concerned.[1-4]

To be of value the system employed must be simple, readily performed, and understood by all. The method which seems to most nearly satisfy these criteria in principle is that described by Cave and Roberts.[5] It is this method in general which will be described, illustrated, and elaborated on.

As pointed out by these authors: "(1) All motions should be measured by degrees from a neutral point of zero. (2) The neutral point from which motion is measured must be defined. (3) It is always worth while to mention the comparative motions in the joint of the opposite limb. (4) Angles should be measured with a goniometer or protractor. (5) Motions of joints above and below the affected part should be measured."[5]

A definition of these criteria, the movements to be anticipated, the normal range of motion, and the best neutral position for comparison of this range of motion in each joint either actively or passively requires further consideration.

The most logical position of joints to be considered as the neutral point or zero from which motion takes place is the normal anatomic position of these joints. In this position, the person is standing erect with his feet straight forward, the upper extremities are straight by his side. In this position, all joints are in extension which, for practical purposes, will not be considered a type of motion but rather a point from which motion and function take place (fig. 1).

Although there is an average normal range of motion anticipated for each joint, variations exist so that comparison should be made with motion in the comparable joint on the opposite side. The ranges of motion cited in this article are considered average for each joint as stated but may vary slightly from other published

From Brooke Army Hospital, Fort Sam Houston, Tex.

figures. In principle, the method employed and the measurements recorded are similar to those on Standard Form 527, Bureau of the

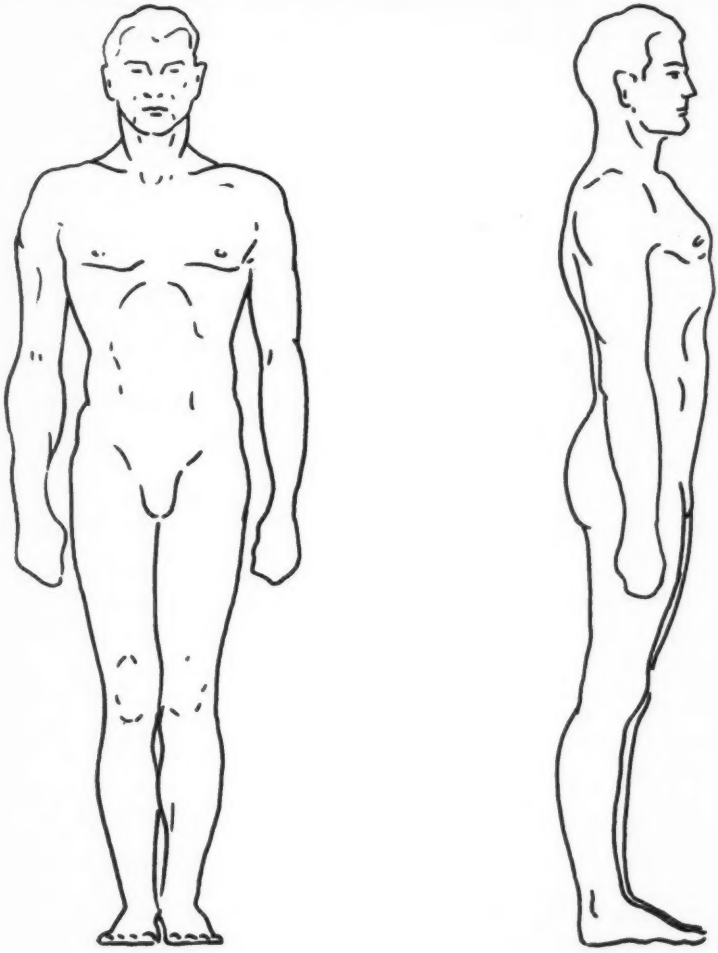


Figure 1. Anatomic neutral position.

Budget, May 1950. It differs in that each movement of each joint is recorded as such and the average limits of that movement are recorded in a more detailed and complete manner.

Both the active and passive range of motion should be accurately measured in degrees, using a goniometer, and the results recorded on a form.

Some methods of measuring a type of joint motion ascribe a range greater than 180°. Such a measurement is unphysiologic and consists of combining two separate types of motion. For example, to state that the wrist extends from 110° to 245° is including a return from volar flexion to the extended position of 180° plus including the range of dorsiflexion of the wrist. In

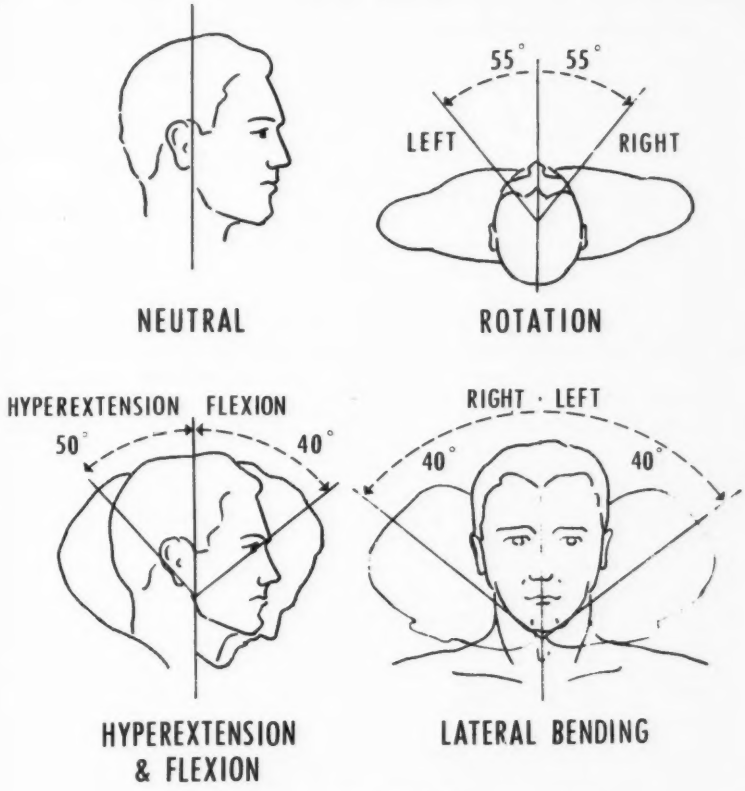


Figure 2. Average normal range of motion of the neck.

like manner, to state that the hip extends to 225° is including the range of hyperextension of the hip. When, for one reason or another, a joint cannot return to its normal extended, neutral, or zero position, it should be recorded as so many degrees of permanent flexion, abduction, and so on for each type of joint motion.

NECK

The neutral position for the neck is with the head up and the chin in, which corresponds to the extended position of zero degrees (fig. 2).

Movements. From the neutral position, movements which take place are rotation, flexion, hyperextension, lateral bending, and circumduction. Rotation to the right and left takes place primarily at the articulation between the first and second cervical vertebrae and to a lesser degree in the articulations between the remaining cervical vertebrae. Flexion, or forward bending; hyper-

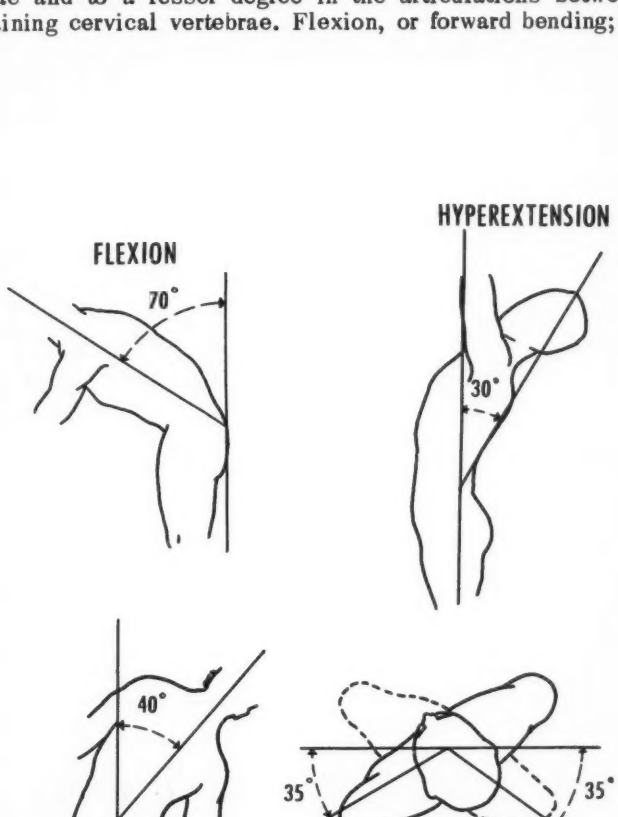


Figure 3. Average normal range of motion of the spine.

extension, or backward bending; and lateral bending to the right and left are a result of the sum of motion in articulations between the skull and all the cervical vertebrae in the sagittal and coronal plane; circumduction, a succession of all the above movements.

Position and Measurement. The patient is seated on a chair with his back to the examiner.

Rotation is obtained by having the patient turn his head to the right and look first over his shoulder, then to the left and look over the other shoulder. Rotation is measured as the angle formed by a line on the sagittal suture of the skull rotating at the axis of the neck. The average limit of rotation is 55° to the right and to the left.

Flexion is obtained by bowing the head forward and placing the chin on the chest. Flexion is measured as the angle formed by the forward bending of the head from the neutral position. The average limit of flexion is 40°.

Hyperextension is obtained by bending the head backward so the patient is looking at the ceiling. Hyperextension is measured by the angle formed by the backward motion of the head from the neutral position. The average limit of hyperextension is about 50°.

Lateral bending is obtained by bending to the right then to the left, approximating the corresponding ear to the shoulder. Lateral bending is measured by the angle formed at the axis of motion by the new position of the neck from the neutral position. The average limit of lateral bending to the right and to the left is about 40°.

SPINE

The neutral position for the spine is with the patient standing erect evenly on both feet; with knees straight; hips, pelvis, and shoulders level; abdomen in; chest out; pelvis rotated in under vertebral column; chin in; head up, with a perpendicular line of weight bearing passing through the mastoid process across the greater trochanter and tibial tuberosity to the base of the fifth metatarsal. The lumbar and dorsal portions of the spine are practically flat, although the curves can be identified. There is no marked lateral curvature although, normally, there may be a slight lateral curvature with the convexity to the right. The Achilles tendons are perpendicular to the ground.

Movements. From the neutral position, motions of the spine are flexion, hyperextension, lateral bending to the right and left, rotation to the right and left (fig. 3), and circumduction. These motions are a result of the sum of motions which take place at the articulations between each of the vertebrae in the sagittal, coronal, and transverse planes respectively. Because of this, accurate measurement is difficult. Motions should be compared with the normal for the individual person, considering age and habits. Alterations in the lumbar and dorsal curves should be noted in both the posteroanterior and lateral planes to determine flattening or reversal of these curves.

Position and Measurement. Motions of the spine should be examined with the patient in the standing, sitting, and lying positions. The sitting position removes the influence of the hamstring muscles on the pelvis. The lying position aids in more accurate localization of pain and an evaluation of muscle tone.

Flexion is obtained by having the patient bend forward to the limit of function. Flexion is measured by the angle formed by the spine at the axis of motion by the new position of the spine from the neutral position. The average limit of flexion of the spine is about 70°.

Hyperextension is obtained by the patient bending backward to the limit of function. It is measured by the angle formed at the axis of motion by the backward bending of the spine from the neutral position. The average limit of hyperextension is about 30°.

Lateral bending is obtained by having the patient bend to the right and to the left to the limit of motion. It is measured by the angle formed by bending the spine to the right and to the left from the neutral position. The average limit of lateral motion to the right or to the left is about 40°.

Rotation is obtained by the examiner fixing the pelvis with his hands and having the patient rotate the body to the right and to the left. It is measured by comparing the angle made by plane of the shoulders with that of the pelvis. The average limit of rotation of the spine to the right or to the left is 35°.

SHOULDER

The neutral position for the shoulder is with the spine erect and the arms hanging straight down by the sides. This corresponds with the extended and adducted position of zero degrees.

Movements. From the neutral position, motions which take place are abduction, lateral elevation, flexion, forward elevation, hyperextension, internal and external rotation in the neutral position, internal and external rotation in abduction (fig. 4), adduction, and circumduction. Movements at the shoulder joint take place between the head of the humerus and glenoid cavity of the scapula together with scapulothoracic, acromioclavicular, and sternoclavicular motion. Once 30° of abduction or 60° of forward flexion is obtained, the relationship of humeroscapular motion remains constant of two humeral to one part scapular motion. Four degrees of elevation of the clavicle takes place for every 14° elevation of the arm up to 90° and none thereafter. About 20° of motion takes place in the acromioclavicular joint throughout the course of abduction. The clavicle rotates upward and backward and the scapula downward and outward during abduction. At

the sternoclavicular joint, the clavicle elevates 56°, retracts backward 25°, and rotates 50° on its longitudinal axis.

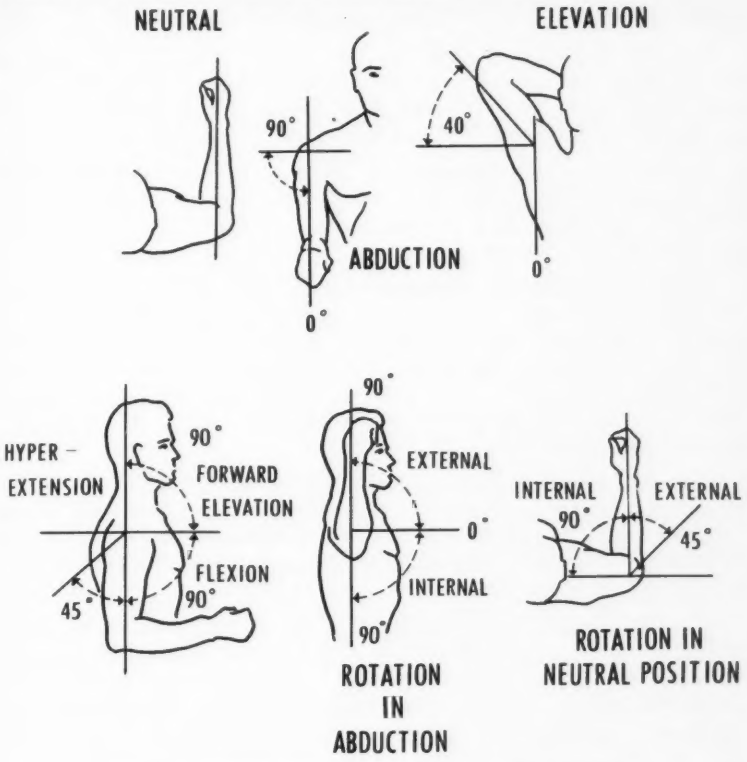


Figure 4. Average normal range of motion of the shoulder.

Position and Measurement. The patient may stand erect or be seated to examine movement of the shoulder joint. For convenience of the examiner and to evaluate movement in the shoulder, the forearm is flexed to 90°.

Abduction is obtained by raising the arm straight out and up from the side, and is measured by the angle formed by movement of the arm from the neutral position. The average limit of abduction is 90°.

Lateral elevation is obtained by continuation of the upward movement of the arm above full abduction of 90° to the limit of motion. This motion is primarily a result of scapulothoracic motion. The average limit of lateral elevation is 40° beyond the 90° of abduction.

Flexion of the shoulder is obtained by raising the arm straight forward and upward from the neutral position. The average normal limit of flexion is 90°.

Forward elevation is obtained by a continuation of the upward movement of the arm. In the completely elevated arm, the clavicle rotates 40° in its longitudinal axis. The average limit of forward elevation is 90° beyond the 90° of flexion.

Hyperextension is obtained by moving the arm backward from the neutral position. The angle formed by the movement of the arm from the neutral position is measured. The average limit of hyperextension is about 45°.

Internal rotation of the shoulder in the neutral position is facilitated by flexing the forearm to 90° and turning the forearm inward. Complete internal rotation can be obtained by placing the forearm behind the back. This motion is measured by the angle formed by the forearm moving from the neutral position. The average limit of internal rotation with the shoulder in the neutral position is 90°.

External rotation of the shoulder in the neutral position is obtained as for internal rotation except that the forearm is turned outward and the angle formed by the forearm in moving from the neutral position is measured. The average limit of external rotation of the shoulder in the neutral position is 45°.

Internal rotation of the shoulder in the abducted position is obtained by flexing the forearm to 90° to facilitate the movement and its evaluation, the arm is abducted, and the forearm moved downward. The angle formed by the forearm in moving from the starting position is measured. The average limit of internal rotation with the shoulder abducted is 90°.

External rotation of the shoulder in the abducted position is obtained as for internal rotation except the forearm is moved upward and the angle formed by the forearm moving from the starting position is measured. The average limit of external rotation of the shoulder in the abducted position is 90°.

Adduction of the shoulder is obtained by moving the arm toward the midline from the neutral position. In the neutral position adduction is prevented by the side of the body, however, about 10° of adduction can be obtained by placing the arm in front or rear of the body.

Circumduction is accomplished by moving the arm in an arc about the shoulder. It is a succession of the above movements and results in describing a complete circle.

ELBOW

The neutral position for the elbow joint is with the forearm extended and the hand in midposition.

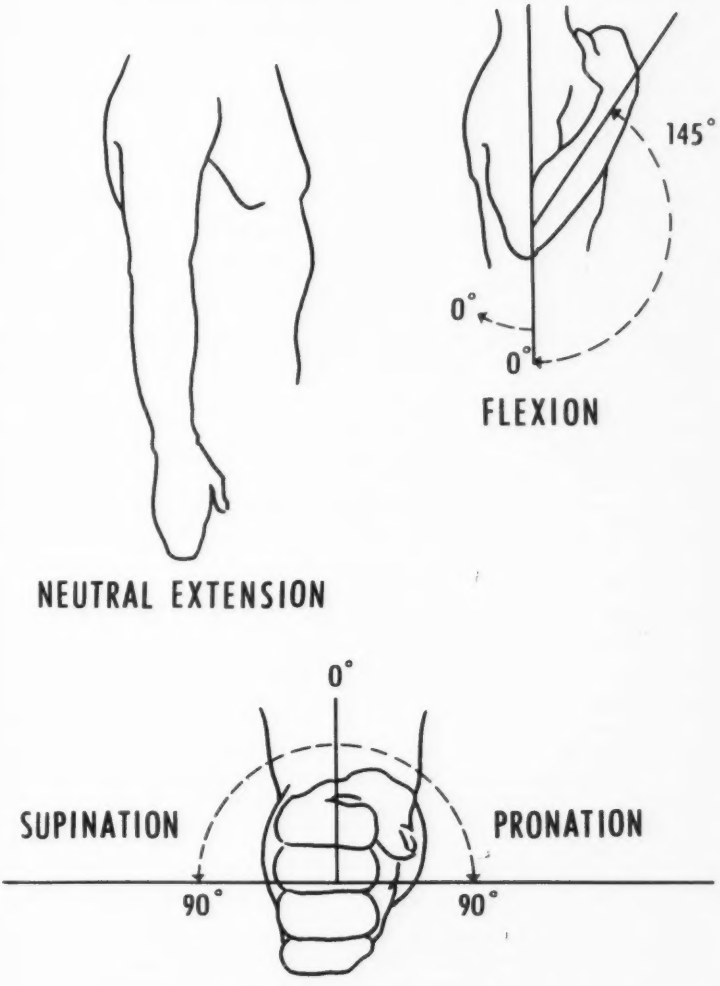


Figure 5. Average normal range of motion of the elbow.

Movements. From the neutral position, movements of the elbow joint are flexion, hyperextension, supination, and pronation (fig. 5). Flexion and hyperextension occur between the humerus

with the radius and ulna. Supination and pronation occur between the radius and ulna and the radius with the humerus.

Position and Measurement. *Flexion* is obtained by forward bending of the forearm on the arm. The angle formed by the forearm moving from the neutral position is measured. The average limit of flexion is 145°.

Hyperextension occurs in the same plane as flexion, only it is obtained by moving the forearm backward on the arm from the neutral position and measuring the angle so formed. Normally, there is no hyperextension at the elbow.

Supination. The forearm is placed with the ulnar border of the hand down and the radial border up. Supination is obtained by rotating the forearm outward with the palm of the hand being turned up. This motion takes place between the proximal and distal radioulnar and the radiohumeral articulations. The angle formed by this rotation from the neutral position is measured. The average limit of supination is 90° at the hand, and 60° if measured at the wrist.

Pronation is measured from the same neutral position as for supination. It is obtained by rotating the forearm inward, turning the palm down. The angle formed by rotation of the forearm and hand from the neutral position is measured. The average limit of pronation is 90° at the hand and 75° if measured at the wrist.

WRIST

The neutral position for the wrist is with the hand extended in line with the forearm with the palm down.

Movements. From the neutral position, movements of the wrist joint are palmar flexion, dorsiflexion (dorsiextension), ulnar and radial deviation, pronation, and supination. A degree of circumduction is possible at the wrist which is a combination of the above movements. These movements occur primarily between the carpus and radius except that pronation and supination occur primarily at the articulations between the radius and ulna.

Position and Measurement. The wrist is placed in the neutral position with the hand in line with the forearm and with the palm down.

Palmar flexion is obtained by bending the hand downward at the wrist. The angle formed by this movement of the hand from the extended neutral position is measured. The normal limit of palmar flexion is 70°.

Dorsiflexion is obtained by bending the hand upward at the wrist from the neutral position. The angle so formed is measured. The normal limit of dorsiflexion is 65°.

Ulnar deviation is obtained by bending the hand toward the ulnar side. The angle formed by a line down the third finger deviating from the neutral position at the wrist is measured. The average limit of ulnar deviation is 30°.

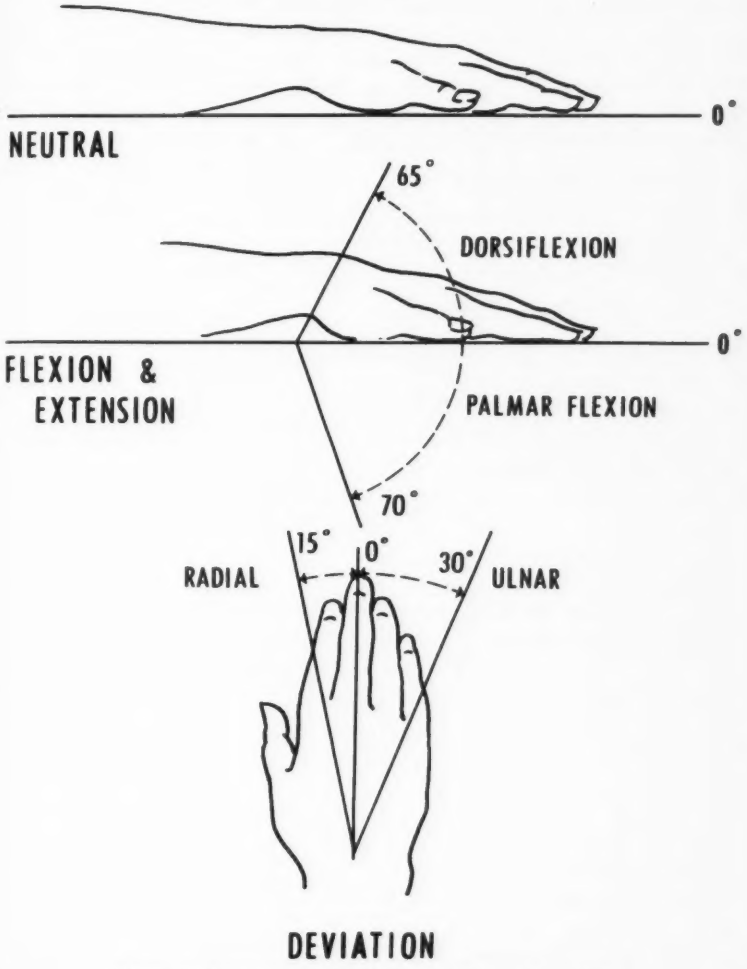


Figure 6. Average normal range of motion of the wrist.

Radial deviation is obtained by deviating the hand to the radial side from the neutral position and the angle so formed measured as for ulnar deviation. The average limit of radial deviation is 15°.

Pronation and *supination* are measured as referred to under the elbow measurements.

FINGERS

The neutral position for measurement of the finger motion is with the fingers extended (fig. 7). Each joint should be measured for flexion and examined for lateral stability. Flexion is the only

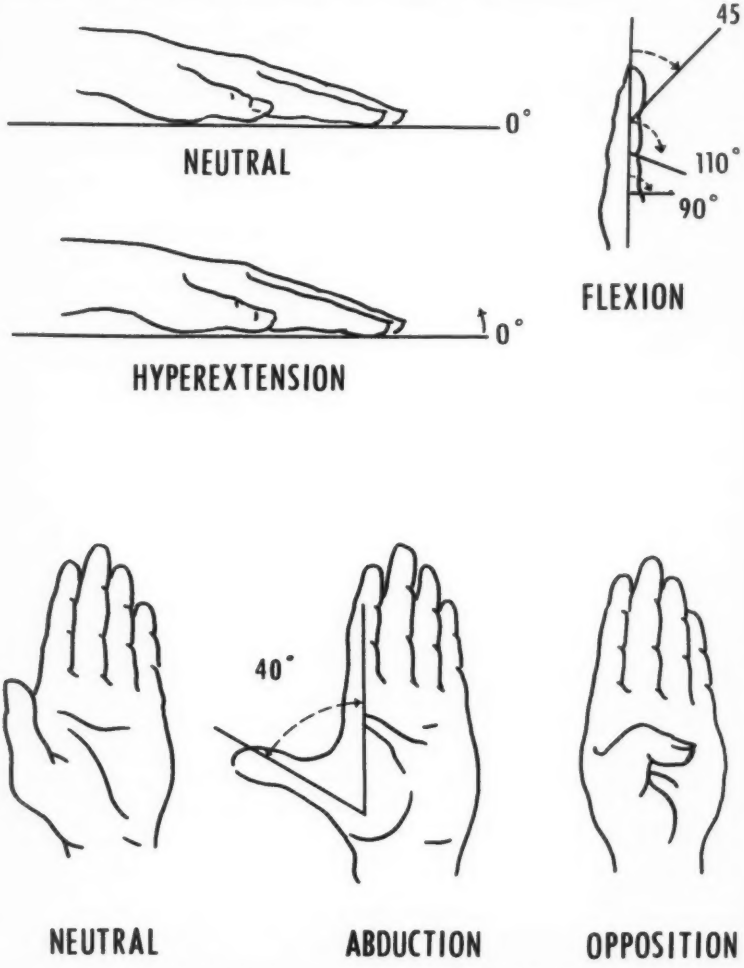


Figure 7. Average normal range of motion of the finger.

motion recorded for each joint. The normal limits of motion are 45° for the distal interphalangeal joints, 110° for the proximal interphalangeal joints, and 90° for the metacarpophalangeal joints. If hyperextension exists, it should be measured and recorded.

The neutral position for the thumb is with the thumb extended alongside of the index finger which is also the adducted position. The motions of the thumb are abduction, flexion of interphalangeal and metacarpophalangeal joints, hyperextension, and opposition. *Abduction* is the radial displacement of the thumb from the index finger and is measured as the angle formed between the thumb and the index finger which normally is 40°. *Flexion* is the forward bending of the joints of the thumb and normally there is 45° of motion at the interphalangeal joint and 45° at the metacarpophalangeal joint. *Hyperextension* of the thumb is possible, normally, so that the tip of the thumb is one inch behind the plane of the dorsum of the hand. *Opposition* of the thumb is that motion produced by rotation of the thumb in an ulnar direction. Normally, it can be carried to a point where the tip of the thumb reaches a point three inches in front of the base of the third finger.

HIP

The neutral position for the hip joint is with the lower extremities in the extended position as in a man standing erect.

Movements. From the neutral position, movements of the hip joint are flexion, hyperextension, abduction, adduction, internal and external rotation in extension, internal and external rotation in flexion, and circumduction (fig. 8). Movement takes place between the head of the femur and the acetabulum.

Position and Measurement. For ease of examination, the patient is placed supine on an examining table. All movements except hyperextension, which is performed in the prone or lateral position, can be determined in this position. Abduction may also be performed in the lateral decubitus position.

Flexion. With the patient lying flat on his back with his legs straight, flexion is obtained by bringing the thigh forward and upward toward the abdomen. The angle formed by the thigh moving from the neutral position is measured. The average limit of flexion of the hip is 120°.

Any limitation of complete extension of the hip should be recorded in degrees of permanent flexion. In order to obtain this measurement, with the patient supine, the opposite hip is flexed on the abdomen until the lumbar vertebrae are flat with the table. The angle formed by the femur with the horizontal line representing the neutral position is recorded as degrees of permanent flexion.

Hyperextension is obtained with the patient lying prone or in the lateral decubitus position. The thigh is moved backward from the neutral position. The angle formed by this movement from the neutral position is measured. The average limit of hyperextension is 45°.

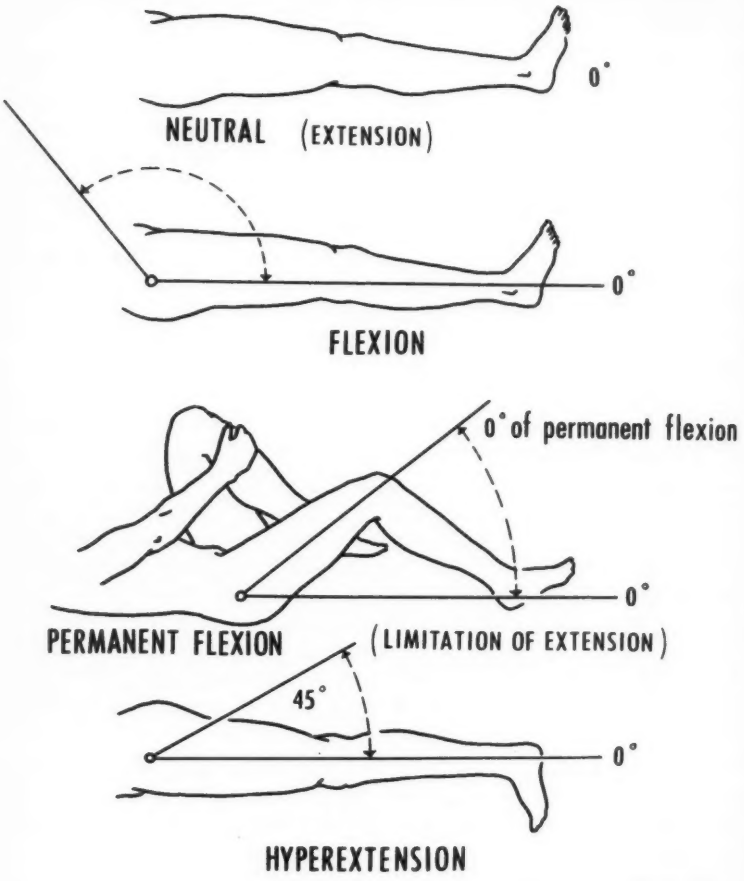
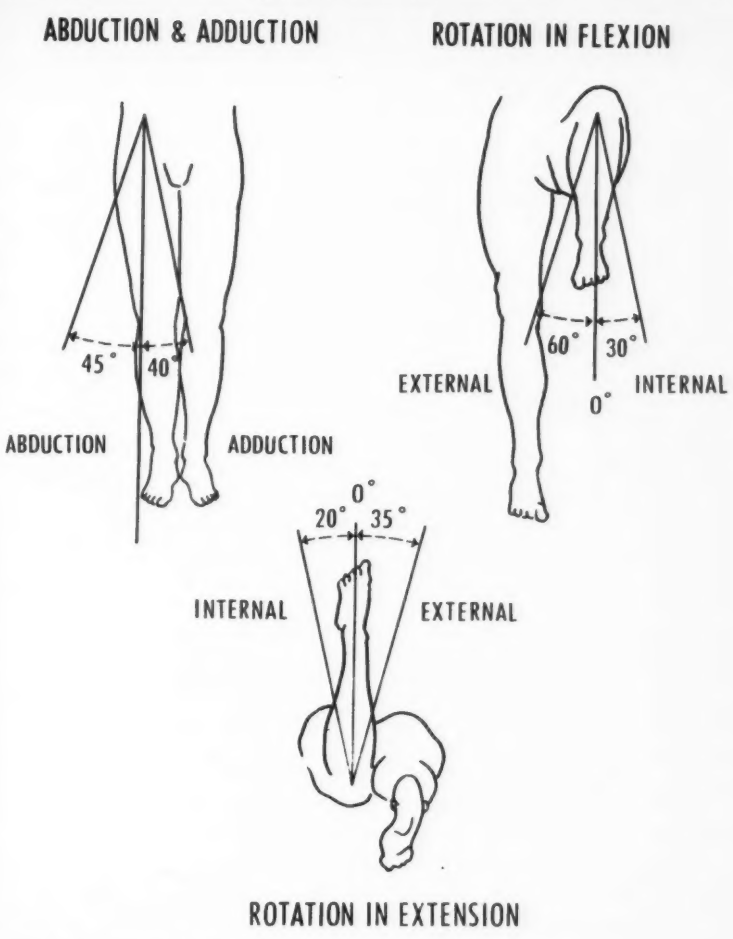


Figure 8. Average normal

Abduction is obtained either in the lateral decubitus or supine position. The thigh is moved outward from the neutral position. The angle formed by this movement from the neutral position is measured. The average limit of abduction is 45°.

Adduction is obtained by moving the thigh across the midline from the neutral position. The angle so formed by this movement is measured. The average limit of adduction is 40°.

Internal rotation in extension can readily be obtained with the patient in the prone position. The knee is flexed to 90° and the leg and foot rotated outward. The angle formed by the



range of motion of the hip.

leg moving from the vertical neutral position is measured. The average limit of internal rotation in extension is 20°.

External rotation in extension is obtained in a manner similar to that for internal rotation except the leg and foot are rotated inward. The angle formed by the leg moving from the neutral position is measured. The average limit of external rotation in extension is 35°.

Internal rotation in flexion. With the patient supine the hip and knee are each flexed to 90°, the leg and foot are rotated outward. The angle formed by the leg moving from the neutral position is measured. The average limit of internal rotation in flexion is 30°.

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External rotation in flexion is obtained in a manner similar to internal rotation except the leg and foot are rotated inward and the angle so formed measured. The average limit of external rotation in flexion is 60°.

Circumduction of the hip is a succession of the above movements obtained by describing an arc with the thigh through the extremes of the various movements of the hip joint.

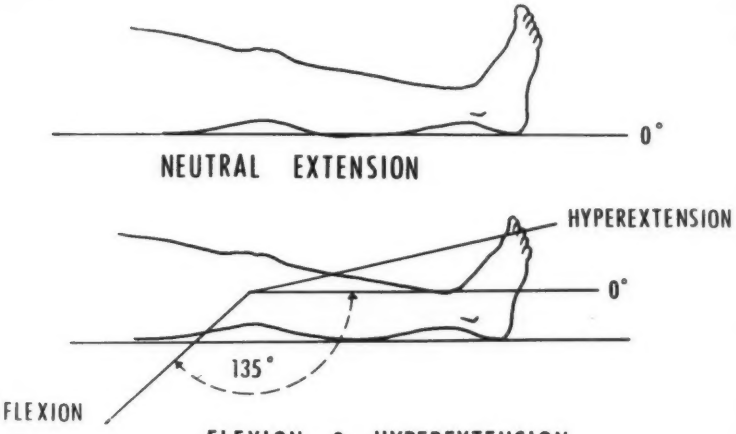

Figure 9. Average normal range of motion of the knee.

KNEE

The neutral position for the knee joint is with the leg in a straight line with the thigh in the extended position (fig. 9).

Movements. From the neutral position movements of the knee are flexion and hyperextension. These movements occur at the articulation between the femur and the tibia. In addition to these movements lateral and anteroposterior stability of the knee joint should be tested.

Position and Measurement. These movements may be measured with the patient sitting on the edge of an examining table or lying supine on the table.

Flexion is obtained by bending the leg backward toward the posterior surface of the thigh. In the supine position, this is facilitated by flexion of the hip. The angle formed by the leg moving posterior from the neutral position is measured in degrees. The average limit of knee flexion is 135°.

Hyperextension is obtained by holding the thigh firm on the examining table and lifting the leg anteriorly from the neutral position. The angle formed by movement of the leg from the neutral position is measured and recorded. There is normally no hyperextension of the knee joint.

Lateral stability is obtained by moving the leg first laterally then medially from the neutral extended position. Any deviation should be recorded as mild, moderate, or severe. This is a test for the medial and lateral collateral ligaments of the knee.

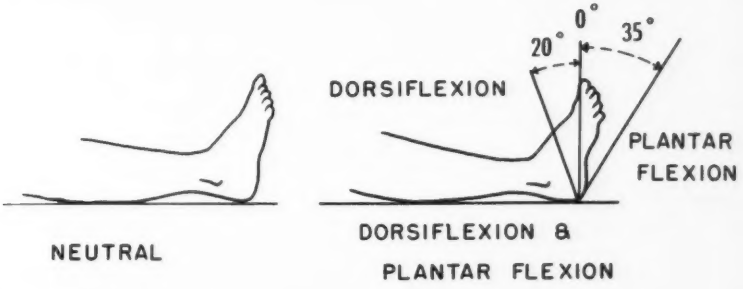

Figure 10. Average normal range of motion of the ankle.

Anteroposterior stability is obtained by flexing the knee to 90° to relax the collateral ligament. The leg is grasped and pulled directly anterior. This is a test of the status of the anterior cruciate ligament. The leg is returned to its normal position and the leg then pushed posteriorly to test the stability of the posterior cruciate ligament. Abnormal motion is recorded as mild, moderate, or severe.

ANKLE

The neutral position for the ankle is with the lateral border of the foot at 90° with the axis of the leg and in midposition as regards to inversion and eversion (fig. 10).

Movements. From the neutral position the movements of the ankle are plantar flexion and dorsiflexion (extension). These movements take place at the articulation between the tibia and talus and should be compared with the knee in the extended position and with the knee flexed at 90° to rule out limitation of motion due to a tight gastrocnemius or soleus muscle.

Position and Measurement. The patient may be sitting or lying supine on the examining table.

Plantar flexion is obtained by moving the foot downward from the neutral position. The angle formed by the lateral border of the foot moving from the neutral position is measured in degrees of

plantar flexion. The average limit of plantar flexion of the ankle is 35°.

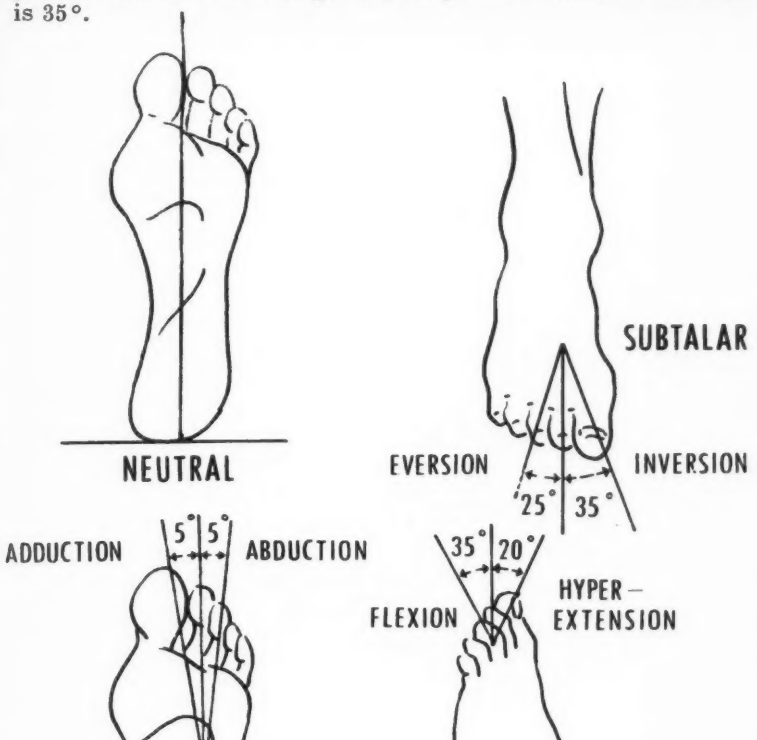

Figure 11. Average normal range of motion of the foot.

Dorsiflexion of the ankle is obtained by moving the foot upward from the neutral position. The angle formed by the lateral border of the foot moving from the neutral position is measured in degrees of dorsiflexion. The average limit of dorsiflexion is 20°.

FOOT

The neutral position for the foot is with the os calcis in neutral position as regards inversion and eversion and with a line bisecting the heels, extending through the second toe perpendicular to a line representing the posterior surface of the heel (fig. 11).

Movements. Movements of the foot are inversion and eversion which occur in the subtalar joint; adduction and abduction which take place in the midtarsal joints; flexion and hyperextension of the metatarsophalangeal joints, which in the great toe is the most important; and interphalangeal joint motions of flexion and hyperextension which are very difficult to measure.

Position and Measurement. *Inversion* is the inward deviation of the os calcis which normally is 35°. *Eversion* is the outward deviation of the os calcis and can normally be carried to 25°. *Adduction* is the inward deviation of the forefoot from the neutral position and normally is about 5°. *Abduction* is the outward deviation of the forefoot which is also about 5°. Metatarsophalangeal and interphalangeal joint motion is of little importance except in the great toe where, normally, it is 35° of flexion and 20° of hyperextension. *Pronation* of the foot is a combination of eversion and abduction which may normally be 15°. *Supination* is a combination of inversion and adduction and normally is 20°.

GIRTH AND LINEAR MEASUREMENTS OF EXTREMITIES

In addition to measurement of joint motion, the length of the extremities should be measured. The length of the upper extremity is measured from the tip of the acromion process to the tip of the radial styloid. The length of the lower extremity is measured from the anterior superior iliac spine to the tip of the medial malleolus on the same side.

Measurements of the circumference of the extremities at prescribed levels should also be performed for completeness of the examination. The arm should be measured three inches above the antecubital fossa; the elbow at the antecubital fossa; the forearm four inches below the antecubital fossa; the thigh six inches above the superior border of the patella; the knee at the popliteal fossa; and the calf six inches below the inferior border of the patella.

As a reminder for examiners and for simplification and uniformity in reporting joint motion and measurement of the extremities a form similar to Standard Form 527 is suggested. It is recommended that this form be modified to include spaces for recording all movements of all joints, both active and passive, together with the average limit of motion in degrees for these movements. A suggested form is shown in table 1.

TABLE 1. *A suggested form for joint measurements*

Joint	Motion	Active	Passive	Average limit of motion in degrees
Neck	Extension			0
	Rotation			55
	Flexion			40
	Hyperextension			50
	Lateral bending			40
Spine	Extension			0
	Flexion			70
	Hyperextension			30
	Lateral bending			40
	Rotation			35

Joint	Motion	Left		Average limit of motion in degrees	Right	
		Active	Passive		Active	Passive
Shoulder	Extension			0		
	Abduction			90		
	Lateral elevation			40		
	Flexion			90		
	Forward elevation			90		
	Hyperextension			45		
	Adduction			0		
	Rotation in abduction Internal			90		
	External			90		
	Rotation in adduction Internal			90		
	External			45		
Elbow	Extension			0		
	Flexion			145		
	Permanent flexion			0		
	Hyperextension			0		
	Supination at hand			90		
	Pronation at hand			90		
Wrist	Extension			0		
	Palmar flexion			70		
	Dorsiflexion			65		
	Ulnar deviation			30		

TABLE 1. *A suggested form for joint measurements*—Continued

Joint	Motion	Left		Average limit of motion in degrees	Right	
		Active	Passive		Active	Passive
Wrist (cont'd)	Radial deviation			15		
	Pronation at wrist			75		
	Supination at wrist			60		
Fingers	Extension			0		
Index	Distal IP* Flexion			45		
	Permanent flexion			0		
	Proximal IP* Flexion			110		
	Permanent flexion			0		
	MCP** Flexion			90		
	Permanent flexion			0		
Middle	Distal IP* Flexion			45		
	Permanent flexion			0		
	Proximal IP* Flexion			110		
	Permanent flexion			0		
	MCP** Flexion			90		
	Permanent flexion			0		
Ring	Distal IP* Flexion			45		
	Permanent flexion			0		
	Proximal IP* Flexion			110		
	Permanent flexion			0		
	MCP** Flexion			90		
	Permanent flexion			0		
Little	Distal IP* Flexion			45		
	Permanent flexion			0		
	Proximal IP* Flexion			110		
	Permanent flexion			0		
	MCP** Flexion			90		

*Interphalangeal. **Metacarpophalangeal.

TABLE 1. *A suggested form for joint measurements*—Continued

Joint	Motion	Left		Average limit of motion in degrees	Right	
		Active	Passive		Active	Passive
Fingers Little (Cont'd)	MCP* Permanent flexion			0		
Thumb	Interphalangeal Flexion			45		
	Permanent flexion			0		
	Metatarcopophalangeal Flexion			45		
	Permanent flexion			0		
	Adduction			0		
	Abduction			40		
	Opposition			3-inch tip of thumb to base of middle finger		
Hip	Extension			0		
	Flexion Knee flexed			120		
	Knee straight			80		
	Permanent flexion			0		
	Hyperextension			45		
	Abduction			45		
	Adduction			40		
	Rotation in flexion Internal			30		
	External			60		
	Rotation in extension Internal			20		
	External			35		
Knee	Extension			0		
	Flexion			135		
	Permanent flexion			0		
	Hyperextension			0		
Ankle	Plantar flexion			35		
	Dorsiflexion (extension)			20		

*Metacarpophalangeal.

TABLE 1. *A suggested form for joint measurements*—Continued

Joint	Motion	Left		Average limit of motion in degrees	Right	
		Active	Passive		Active	Passive
Foot	Inversion			35		
	Eversion			25		
	Adduction			5		
	Abduction			5		
	Pronation			15		
	Supination			20		
Toes	Metatarso-phalangeal Flexion			35		
	Hyperexten-sion			20		

Extremity Length

		Left	Right
Lower extremity	Anterior superior spine to tip of medial malleolus		
	Umbilicus to internal malleolus		
Upper extremity	Tip of acromion to tip of radial styloid		

Circumference

		Left	Right
Arm	3 inches above antecubital fossa		
Elbow	At antecubital fossa		
Forearm	4 inches below antecubital fossa		
Wrist			
Chest	Inspiration		
	Expiration		
Thigh	6 inches above superior border of patella		
Calf	6 inches below inferior border of patella		
Knee	At popliteal fossa		
Ankle			

SUMMARY

The method of recording joint motion described simplifies the procedure by considering only one function of the joint. The extended position is considered the zero and not measured as a

joint function and all motion is measured from this neutral point. Failure to extend to this zero or neutral point is recorded as so many degrees of permanent flexion. The confusion of recording several readings is eliminated, for example: instead of recording, "the elbow flexes from 180° to 60° and extends from 60° to 180°," it is recorded as: "the elbow flexes 120°, no permanent flexion." In those patients where limitation of motion may exist, a report might read, "the elbow flexes from 20° to 100°; 20° of permanent flexion." Further, the confusion of ascribing more than 180° to any one motion which is not physiologically possible is eliminated. Each functional motion of the joint is recognized and measured.

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NIGHT BLINDNESS

It is important to recognize that night blindness is not a specific symptom of avitaminosis A. The occurrence of this symptom should be an indication for a careful dietary history and examination for other factors which contribute to deficiency. Remember well that the usual complaint of temporary blindness after passing an oncoming car while driving at night is due a thousand times more often to poor eye habits in driving than to deficiency. Show your patient how to watch the *right edge of the road,* not the lights of the oncoming car. Don't give him vitamins. Bad driving habits will kill him just as quickly whether or not he has a liver full of carotene. Remember, too, that as people get older their eyes tend to be less efficient. Trying to treat the normal decline of age with vitamins is interesting, expensive, useless, and done too often. In deficiency, night blindness does not seem to occur until liver stores of the vitamin are exhausted.

—PAUL WILLIAMSON, M. D.
in *Canadian Medical Association Journal,*
pp. 21-22, July 1954

DR. JOSEPH WARREN, PHYSICIAN AND PATRIOT

CHARLES H. BRADFORD, *M. D.*•

IT seems unfortunate that Joseph Warren is remembered so vaguely today, and that his associates are largely forgotten. Those who recall that Warren died heroically at the battle of Bunker Hill will perhaps fail to realize that he occupied, at the time, the position of the leading medical practitioner in Boston. Even fewer will appreciate the extent of his influence in the political field. Second only to Sam Adams, he organized, led, and controlled the popular movement of resistance to British oppression. Together, they exercised such diplomacy, courage, and skill that their efforts played a large part in precipitating the American Revolution. These three aspects of Warren's life—military, medical, and political—are illustrated dramatically by his activities in the last 24 hours before he was killed, as related by his nephew, Dr. Edward Warren. Though unconfirmed and possibly inaccurate, the incidents are characteristic enough to be worth repeating. On the night before the battle, it is known that he presided over the Provincial Congress, which met in Watertown. On the following morning, he is said to have attended an expectant mother; labor pains were slow, however, and he left the delivery to an assistant, after telling his patient that he must go to Charlestown "to get a shot at the British." Because of this medical call, it is supposed, he was late on the battlefield, but not too late to refuse a major-generalship and fight as a private in the front line, and not too late to stand fast when defeat overwhelmed his comrades and to meet death with unwavering defiance.

Warren began his medical career in 1760, under the tutelage of a prominent Boston physician, Dr. James Lloyd, who in turn had been trained in London with William Hunter. Since no medical school was available in Massachusetts before 1783, the apprentice system took its place during these earlier days. In some respects this method of teaching offered advantages that have never since been duplicated. Through it, the preceptor, in addition to dispensing his *knowledge,* could impart a share of

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his *wisdom,* which the pupil might not absorb in any other way. For the technical subjects, teaching was more than adequate. Compounding of drugs, for example, served as instruction in pharmacology in a way superior to any modern pedagogy. Substituting on calls, doing dressings, and covering minor emergencies gave the apprentice a graded sort of clinical experience that could hardly be surpassed. Didactic instruction came when he was accompanying the doctor on visits and discussing cases with him—equivalent to present ward teaching. Anatomy was learned by dissection, when and where possible. Body-snatching was the recognized method of obtaining anatomic subjects, since no legal method of obtaining bodies had been established.

In 1764 Warren, aged 23, began practice for himself, rapidly advancing to eminence. A major reason for success lay in his extraordinarily appealing personality and character. His portrait, by Copley, now hanging in the Boston Museum of Fine Arts, shows a young man of a pleasing appearance, fair complexion, and athletic physique. His features tend to corroborate contemporary claims that he was the handsomest man in Boston of that day. Unfortunately, Copley seldom succeeded in catching an inward glimpse of the spiritual temper of his sitters. Here, the somewhat dull expression of the painting fails to suggest the fervor and intensity of Warren's emotions, or the lion-like courage that his actions demonstrated.

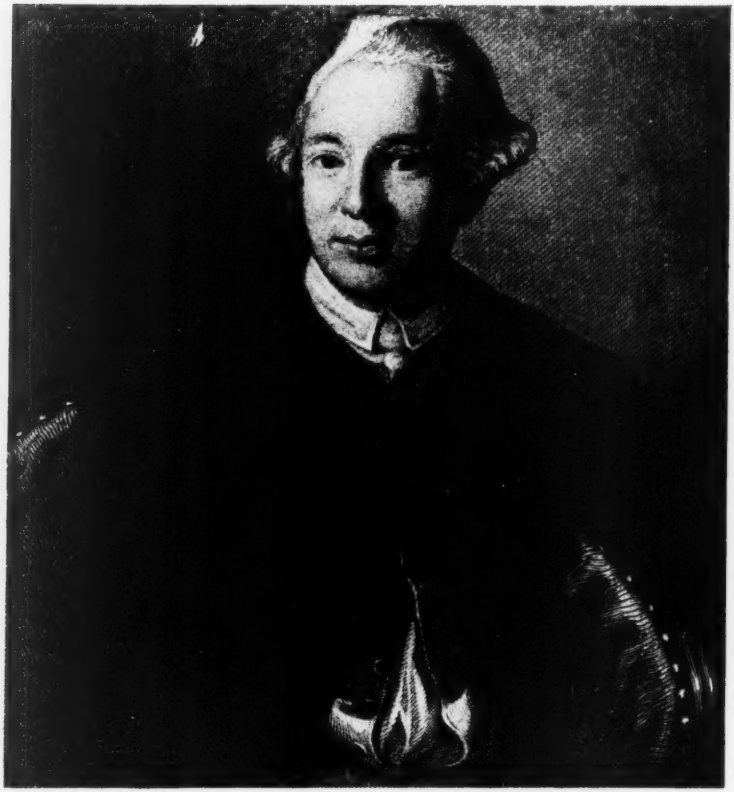
One of his outstanding characteristics was his rare, personal magnetism, which drew all men to him. He held, for instance, the intimate and confident friendship of rigid, puritanical John Adams, and at the same time, shrewd, hard-headed Sam Adams loved him more than any other man. Even a man as remote in temperament as Benedict Arnold idolized the person and the memory of the great patriot. Still further evidence of Warren's unique capacity for evoking friendship was demonstrated by the commission he received in 1769 from the Grand Master of Masons in Scotland, appointing him the first Grand Master under the Scottish Charter in America. Combined with this personal attractiveness, Warren possessed almost limitless energy. Up to the last few months, he seems never to have forsaken or neglected his professional duties. Only physicians, perhaps, can appreciate how absorbing the responsibilities of practice are. Yet on top of all these, Warren heaped an endless load of civic, social, and patriotic activities that would have overwhelmed an ordinary man. Through the sternest trials he carried these tasks with a grace and charm of manner that never betrayed the irritations or frustrations of fatigue. Two other endowments gave Warren particular force: a clarity of intelligence that shone like a light through the perplexing problems of his time, and a spiritual intensity that burned like fire in the face of oppressive dangers that most men would have shunned.

Having won success in practice, Warren was generous in sharing it with the group of apprentices who soon applied to serve under him. They were men, in themselves, whose careers were to prove most interesting. One was Dr. Samuel Adams, son of the great political leader. Another was William Eustis, who

Joseph Warren as an officer in the Revolutionary War, from an engraving by Alonzo Chappel from his painting in 1861.

served throughout the Revolution as an army surgeon and who eventually took up politics and finally became Governor of the State. John Warren, 12 years younger than his brother, was from a medical standpoint the most successful of his apprentices. He, too, served with the army in a number of campaigns, and then returned home in 1777 to direct a military hospital, which was located in a pasture in the West End of Boston, close to the present site of the Massachusetts General Hospital.

In addition to these "apprentices," the contemporary associates of Joseph Warren formed an interesting group. Three in particular deserve mention. Dr. Bulfinch attracts notice only as a father of Charles, the great architect, who designed the Massa-



An engraving of Joseph Warren by Thomas Illman from the full-length portrait by John Singleton Copley, in Fanueil Hall, Boston.

chusetts General Hospital and the State House and who completed the design for the Capitol in Washington originally worked out by Hallet, Thornton, and Latrobe. The father was a successful practitioner but something of an individualist. His charge for midwifery was 42 shillings, and he refused to join the Boston Medical Association, which regulated the fees of its members,

because this organization set the charge exorbitantly at 48 shillings. Far more important in Joseph Warren's life was John Jeffries, a Boston man of about his own age, who had carried out his medical studies in London and then returned to practice in Boston. Because of his British affiliations Jeffries remained a Tory, but this apparently did not disturb his personal relations with Warren. At Bunker Hill, Jeffries accompanied British officers immediately after the battle, and it was he who positively identified Warren's body before its hurried burial. Instant death had been caused by a bullet that shattered the skull. After the British evacuation of Boston, almost a year later, when the patriots' bodies were disinterred for reburial, another positive identification was required. It was carried out by Paul Revere, who was able to recognize his own handiwork in a tooth he had made for Warren.

An appraisal of Joseph Warren's political activities would require far more space than is permitted here. In general, his efforts may be divided into three major phases: as propagandist, as legislative-executive, and as a man of action. In the first respect, he was tireless. Year in and year out, for a decade, his writings held the Tory leaders continuously on the defensive, and at the same time they cultivated and built up a spirit of patriotic enthusiasm among his compatriots. As early as 1768 Warren wrote such a convincing denunciation of Tory blunders and abuses that the Royal Governor, Bernard, in a fit of indignation dissolved the patriot legislature because it had failed to suppress papers of this sort. At the height of the crisis, in 1774, Warren composed the masterly Suffolk Resolves. These were transmitted to Philadelphia for consideration by the first Continental Congress. The straightforward, hard-hitting language astonished that assembly. "It is tantamount to a declaration of war," one of the more timid members objected. But its sentiments were expressed with such simple eloquence that they suggest the grand diction of the Declaration of Independence, which followed a year later. A brief sample deserves quotation:

> To us, our venerable progenitors bequeathed the dear-bought inheritance of liberty; to our care and protection, they consigned it; and the most sacred obligations are upon us to transmit the glorious purchase, unfettered by power, unclogged with shackles, to our innocent and beloved offspring . . . In a cause so solemn, our conduct shall be such as to merit the approbation of the wise, and the admiration of the brave and free of every age and of every country.

Most impressive of all Warren's appeals was his oration in the Old South Church a month before the battle of Lexington and Concord. As one passes that building today, one can see the great window behind the pulpit where he made his entry. Be-

cause the hall below was too tightly jammed by the throngs of people to allow him passage, he came by ladder through the window. Three hundred British officers in their scarlet coats had gathered at the front of the hall to overawe and intimidate the speaker. In fact, it was stated on the authority of Hutchinson that some of this group seriously considered assassinating Warren. Rumors also circulated that all the patriot leaders appearing here would be arrested and shipped to England for trial as traitors. This was, as a matter of fact, the intent of the British Ministry, but General Gage hesitated to carry it out, knowing the violence of public reaction that could be expected. It was here, on a similar occasion two years before, that Warren had coolly dropped a white handkerchief on the pistol of one officer who pointed it up at him. Again. thoroughly undaunted, Warren exhorted the Parliamentary leaders to desist, and warned Britain of the danger that would follow any further aggressions against the colonies. Unfortunately, his well reasoned arguments, like the great rhetoric of Edmund Burke, failed to penetrate the stolid stupidity of England's ruling class.

As a legislative-executive, Warren's achievements have passed more or less unnoticed, although they equal his other feats, and in some respects exceed them. It must be remembered that after the battle of Lexington and Concord there was, as yet, no Declaration of Independence, and therefore the Royal Governor still retained his full executive powers. In the absence of any other legally constituted authority, government might easily have degenerated into mob rule. This was just what the Tories had predicted would follow in the wake of the revolutionary movement. The patriots avoided such a disaster by electing their own "congress," of which Warren was president, and by delegating its assumed powers to a committee of public safety, of which Warren was chairman. Thus, during the two months between Lexington and Bunker Hill, nearly everything that had to be done required Warren's initiative, Warren's judgment, and Warren's decision. In this interval an army of 8,000 undisciplined countrymen had assembled on the outskirts of Boston. They must be fed, sheltered, drilled, and furnished with arms. Ammunition must be supplied. Tactical plans must be considered and approved. In addition the problems of the civilian population must be regulated: a large number of refugees from Boston must be housed and cared for; the support of communities ruined by oppressive British legislation must be provided; and order must be maintained. Public relations, especially with the other colonies, were of great importance and must be handled with extreme delicacy and tact. It is no exaggeration to say that all these problems came to Warren's hands, and with magnificent capability he met and overcame them, one by one. In two short months the rustic farmers and tradesmen were molded into ele-

ments of an army, rudely equipped and sternly but willingly sent to the great encounter at Bunker Hill.

Above all else, Warren preferred the role of action. His nephew states that he devoted part of every day to military exercises. He had often declared his willingness to die for the cause he held sacred. This seemed axiomatic with him. In one of his speeches he had asked characteristically, "When Liberty is the prize, who would shun the warfare; who would stoop to waste one coward thought on life?" This instinct for action did not grow unnaturally in Warren's character. As a small boy he had heard his father remark, "I would rather my son were dead than that he should be a coward." His father's uncle had been captured in the Deerfield Indian massacre and was dragged all the way to Canada before his rescue. Such a background afforded no pacifist tradition or timid complaisance. It is small wonder, then, that when the first shots were fired at Lexington, Joseph Warren, who had the night before dispatched Paul Revere and William Dawes with messages of danger, should have hastened to engage in the combat. He was joined by his brothers, Eben, who came from Roxbury, and John, who hurried from Salem. With characteristic disdain for caution, Joseph exposed himself to the British fire so recklessly that a musket ball carried away a lock of hair that he wore in fashionable style over his ear. This close escape failed to teach him to take cover. It is reported that he engaged in every minor skirmish that took place up to the Battle of Bunker Hill.

From such venturous exploits, one might judge Warren to be a thoughtless firebrand who placed a low estimate on the value of life, but this was far from true. His intellectual attainments, his literary skill, and his scientific and medical training all belie the idea. By nature he was deeply religious, and his family attributed to him an unsurpassed knowledge of the Scriptures. His social position brought him friends in all walks of life. His family affairs were more than normally happy. He had married early and was the father of four promising children. Tragedy interrupted this domestic joy when his wife died prematurely in 1773, but subsequently he became interested in Miss Mercy Scollay, and was thought to be engaged to her at the time of his death. Thus, having already won so much honor and success he was faced with no obstacle that could bar further progress toward everything a man might desire. In fact, as the historian Bancroft remarked, "the future seemed burdened with his honors." Why, then, did he needlessly, almost wilfully, and in spite of the protests of his friends, throw away his life in the first pitched battle? The question can bring only a conjectural answer.

One possibility is that he was carried away by the excitement of combat, as one of his friends had warned him would be

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the case. Perhaps, as often happens, the battle tensions that grip men under fire superseded his instincts of self-preservation. He himself had once expressed something of this inward fury. "They say we will not fight," he remarked, and added, "Would to Heaven I might die knee deep in their blood!" Or, possibly, with his keen political intuition and passionate devotion, Warren foresaw that the inspiring example of his courageous death would contribute more to the young and untested revolutionary cause than anything he could give it in life. Very probably it occurred to him that the banners of insurrection must be deeply colored in the red dye of mortal sacrifice before they could lead the crusade for human liberty to a triumphant end.

PREVALENCE OF DIABETES

The number of diabetics in this country has been estimated to be about 2,000,000. Approximately 1,000,000 of this number are aware of their condition, leaving another 1,000,000 unknown diabetics. Estimate has also been made that around 4,500,000 of the present population of the United States eventually will become diabetic. Results of this survey and a survey done at the University of Southern California seem to indicate that there are approximately six or seven diabetics in each 1,000 college students, who are the usual age of freshmen and new students.

Unless diabetes mellitus is found and treated in its early stages, such complications may occur as retinitis, arteriosclerosis with resulting coronary thrombosis and gangrene, coma, malnutrition, cataract, and diabetic neuropathy. The asymptomatic normal-appearing diabetic person is not free from the progressive degenerative pathologic changes which bring about these many complications. For the sake of the patient, diabetes must be controlled either by insulin, strict diet, or by both insulin and diet.

—WILLIAM E. TAYLOR, M. D., et al.
in *Journal Lancet,*
p. 247, July 1954

GENERAL PRINCIPLES OF MILITARY SURGERY

WARNER F. BOWERS, *Colonel, MC, USA*

THE CONCEPT that military surgery is identical with civilian care of trauma has been fostered, and while in general there is a similarity, certain very distant differences exist. If one were required to epitomize military surgery in one sentence, it might be stated as follows: Do the most good for the greatest number at the right time and in the proper place. If all of the ramifications and connotations of this statement were well understood, no further discussion of the subject would be required.

Good military surgery is not a makeshift or make-do but embraces good clinical judgment and advanced technical skill with the modifications required by the time and space factors which are interjected by the military situation. All casualties must be treated correctly and with good judgment, even under the most adverse physical conditions such as mountainous terrain, absence of roads, one-way bridges, mud, or desert. Naturally, military necessity is of prime importance and winning of the war is a paramount requisite. Ideal surgical management must conform to this necessity even though it may mean interference with wound healing. In rare instances, it may mean that an ordered evacuation will cost lives, and in still rarer instances it may mean that the wounded must be abandoned on the battlefield. These are stern necessities which must be faced, distasteful as they may be.

An essential dictum of military surgery, and one which may be difficult for civilian physicians to grasp, is: Do not care for the one at the expense of the many! While a civilian physician may spend all night with one seriously ill patient, the military surgeon must consider the fact that 50 casualties may be awaiting his care and he must budget his time so as to do the most for the greatest number. Success of military surgery, therefore, depends in large part on proper triage or sorting of patients. This procedure, accomplished by the most experienced surgeon present, is repeated at each medical installation in the chain of evacuation in order to make three decisions: First, which patients require immediate care, which require a period of resuscitation before definitive care, and which have no priority for treatment because

From Brooke Army Hospital, Fort Sam Houston, Tex.

of the essentially fatal nature of their wounds; second, which patients can be returned to duty locally, keeping in mind that the mission of the Medical Service is to conserve the fighting strength; third, which patients require evacuation further to the rear for more skilled or more extensive care.

MEDICAL ECHELONS

Because casualties are evacuated through a chain of medical installations, it is obvious that some division of labor is necessary and some policy must be set up, stating what functions each echelon will perform. This echeloning of medical care has at least three main objectives in correlation with proper triage. First, echeloning assures early care for the most serious cases, those classed as nontransportable being treated within the division area. Second, it assures the maintenance of sufficient empty beds in each installation to take care of tomorrow's fresh casualties. This means that after properly performing its allotted function, each installation disposes of the patients as rapidly as possible. Third, it prevents evacuation of lesser injuries by stopping the rearward movement of casualties who require no further care and who may therefore be capable of going to duty locally within the prescribed evacuation period. This helps to conserve fighting strength, keeping in mind that soldiers evacuated beyond the division area have a decreasing prospect of returning to duty with their outfits.

THE SURGICAL TEAM

The military surgical team is a large one, embracing all echelons from the aid man on the field to the surgeon in the general hospital. Members of this far-flung team care for the same patients successively in point of time and space. The military surgeon depends on the next forward unit for proper initial care and evacuation, and on the next rear unit for proper further care and disposition. The military surgeon, of necessity therefore, cannot follow his patient to completion, but rather he performs his allotted function and passes the responsibility for further care to his confrere in the rear. Were it not for the fact that military surgeons are human, such a system would be ideal because here there is no need to struggle to get patients, there is no competition except for the best possible results, and each man can be proud of the work done by other members of the team to the front and to the rear. This teamwork allows the utilization of surgeons with incomplete training because only the skill and technical knowledge required at his echelon of assignment is needed and this can be mastered quickly by a partially trained man. Fortunately, it is not necessary for each military surgeon to be skilled in all procedures from resuscitation to reconstructive plastic and orthopedic operations. In such a system, over-all guidance is given by traveling

consultants who promulgate policies of treatment and bring follow-up information. Only in this way can the young surgeon learn what has happened to the patients whom he has treated and evacuated. By this means he gains confidence in himself or is afforded the opportunity to profit by his mistakes before too many casualties have passed through his hands.

DIRECTIVES

From the foregoing, it is apparent that directives must be issued, stating what procedures will be accomplished at various echelons and occasionally directives must be issued stating what technical procedures are acceptable. Civilian doctors must learn the necessity for this and must realize that such directives are not pure whimsey. Procedures such as primarily closed-flap amputation stumps, although suitable for university hospital work, have no place in battle casualty work, and similarly, loop colostomies with incomplete division may be sufficiently diverting for temporary civilian use but may be entirely unsatisfactory for a long evacuation to a general hospital thousands of miles away. Because doctors are individualists and resent being told how to treat their patients, such technical directives are kept to a minimum consistent with good results. The eager young surgeon who does too much at his echelon may make patients nontransportable who should be evacuated, and, by doing too much or too complicated procedures, he may deny time to other patients who need his care. Furthermore, he slows the chain of evacuation and keeps too many beds full in his installation so that there may be insufficient empty beds for the next day's casualties. Such a situation may be extremely serious from the military standpoint.

TRANSPORTATION

All possible modes of transportation are used in the evacuation of patients. Walking wounded tend to follow natural lines of drift, assisting each other or even using the pickaback method. Litter-carry is extensively used in forward areas but may be very wasteful of personnel—as in Korea where four or eight bearers sometimes were needed for each litter because of the difficult terrain, long haul, and human fatigue factors. Small boats and local carts augment jeeps and tanks as makeshift ambulances. Even the light liaison planes are used on occasion. The helicopter has become an integral part of planning for evacuation and the story of its use in Korea is now well known. Field ambulances and railroad trains still play their customary role even though airplanes have become commonplace. Ships still play a minor role in Army circles where they function largely as sea ambulances in contrast to Navy usage where they function as general hospitals. The ready availability of empty airplanes is not always helpful for several reasons. First, such ready availability may cause patients to be evacuated

too soon. Second, because there is a tendency to hold those who are seriously wounded for further observation, it may cause evacuation of the less severely wounded who might have been able to return to duty locally. Next, it may be that patients will be started on a long trip which will keep them in transit at a time when some definitive procedure such as wound closure should be carried out, thus delaying convalescence. Finally, it must be remembered that most available planes are cargo carriers going back to their base of origin and are not under medical control. Therefore, patients evacuated may end up in an area far removed from a special treatment center.

MEDICAL INSTALLATIONS

A brief recapitulation of the functions of various medical installations seems indicated at this point. The battalion aid station is concerned with first aid and resuscitation, including maintenance of airway, control of hemorrhage, application of splints and dressings, administration of narcotic for pain relief, the tetanus immunity booster dose, and initiation of chemotherapy, infusion of blood, plasma, or volume expander, and initiation and transmission of proper records. The collecting station serves as an ambulance relay post and the clearing station is responsible for proper sorting of patients and treatment of minor injuries. Definitive care is given in the mobile army surgical hospital (MASH) to nontransportable wounded in the division area, including unconscious patients and those with extensive burns, some major amputations, thoracicoabdominal and craniocerebral injuries, wounds of the genitourinary tract and the spine, injuries to major blood vessels and perineal-rectal area, and penetrating wounds of the abdomen. After definitive care, these patients, together with patients with lesser injuries who have bypassed the MASH, are sent to the evacuation hospital which in some instances may function as a MASH although usually less mobile. General hospitals serve to give rehabilitative and reconstructive care. In general, it should be realized that the closer the hospital to the fighting lines, the higher the case fatality rate because more fatally wounded will live to reach it. The maximum forward location is where the greatest number of casualties can be saved with the least danger from enemy action. Any casualty dying after reaching the first medical installation (Bn Aid Sta) is said to have died of wounds (DOW) as compared to those who die before that time who are referred to as killed in action (KIA). Consequently, within reason, the higher the DOW rate, the lower the KIA rate.

Skilled professional personnel in scarce categories are conserved by the use of specialty teams and the establishment of specialty centers. While this system is subject to abuse, it is easier to assemble patients with similar injuries for physicians in

scarce categories in a few places rather than to try to teach large numbers of surgeons the special skills needed in their care. A prime example is the field of neurosurgery.

SUMMARY

All efforts are aimed at conservation of the fighting strength by doing the most good for the greatest number at the right time and in the proper place. Each military surgeon must be trained to know his proper niche and to perform his allotted function there to the very best of his ability, trusting in his fellow members of the team to front and rear to do the same. This applies to all, from the solcier in the front line who helps bandage his wounded buddy to the Surgeon General who has over-all responsibility for the supervision of the entire medical service.

THE CONSULTATION AND PROFESSIONAL ETIQUETTE

Time was when a consultation was just that—in the Websterian sense, a deliberation of two or more persons. An hour was agreed upon at which the physicians would meet and in no instance would the consultant see the patient before the arrival of the attending physician if the latter were not at the scene first. Somewhere this genteel deportment has been lost in the hurly-burly of modern living, along with many of the gracious customs of the leisurely times which preceded our own. And not, may it be said, necessarily to the benefit of the patient or the doctor.

Not two days ago a confrere related the story of a patient who had seen two consultants. Each, plus the attending physician, had prescribed thyroid without knowledge of the other prescriptions.

Indefensible? Perhaps, but it points up a reasonable desideratum: the need of specific instructions in the referring of patients. Is this patient referred for examination and recommendation, or for examination and continued care? The specific intent of the referring physician is often unclear to the consultant. He would much prefer that it be sharply defined.

An adaptation of the amenities of an earlier day will recapture the dignity which was lost when doctors began to request their consultations as they passed in the hall: "Say, Jim, see Mrs. Jones in 421, will you? And leave a note on the chart."

—LOUIS J. BAILEY, M. D.
in *Detroit Medical News*,
p. 6, Oct. 18, 1954

PSYCHIATRIC CASUALTIES IN U. K. ELEMENTS OF KOREAN FORCE

December 1950–November 1951

J. J. FLOOD, *M. D., D. P. M.*

THIS short paper has been written mainly to give an account of the psychiatric breakdown in United Kingdom (U. K.) troops engaged in Korea during the 12 months from December 1950 to November 1951. It includes also a short analysis of psychiatric casualties among the Australian, New Zealand, and Canadian members of the Commonwealth forces who also came under our care. It does not include the Royal Navy and Royal Air Force personnel referred for psychiatric opinion and disposal as there were so few that they have no statistical importance in this survey. It will be remembered that the Korean war started in June 1950, and within a short while British troops were actively engaged in fighting the North Koreans. In November 1950, the 29th British General Hospital arrived in Kure, Japan, to serve as a base hospital for the Commonwealth members of the Korean force. By this time the 28th Brigade, which had been dispatched from Hong Kong and supplemented by an Australian battalion, was already an active fighting unit. The two U. K. battalions were two well-integrated units who had trained together in the New Territories adjacent to Hong Kong. It is worthy of note that on arrival in Japan there were but a few psychiatric casualties awaiting disposal even though the Brigade had been in a considerable amount of combat. About the same time as the arrival of the hospital the 29th Brigade was ready for action, but had not as yet actively engaged the enemy on a large scale. This brigade was in the main one of reservist soldiers, all somewhat discontented with their recall, and it was clear that there was a high potential psychiatric breakdown within this member of the force. The majority of the reservists were men who had joined the Regular Army in the immediate prewar years and had seen a considerable amount of active service, and when reverting to civilian life, though still on Class A Reserve, were physically and mentally fit. It was to be expected therefore that the vast majority were relatively mature, stable personalities capable of making a good social adjustment to their environment,

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and with combat experience behind them they were in possession of a fair measure of security. Indeed, these traits were present but were offset to some extent by the understandable resentment and hostility of being recalled. Reservists were a considerable problem over the first few months and, though presenting with anxiety symptoms often unrelated to battle, they had sufficient insight and judgment to know what was expected of them. Many such cases precipitated by domestic upheavals and home worries were most adequately dealt with by welfare authorities.

The base hospital was structurally comfortable and adequate for our needs, comparing only too favorably with the harsh environment of Korea. In general it may be said that the psychiatric center was "too far back" and if suitable accommodation could have been found in Korea itself it would have been easier to deal with those cases of mild to moderate severity in which a "returned to unit" (R. T. U.) was considered worth while. It may be truthfully said that the psychologic resistance to a R. T. U., whether conscious or unconscious, is inversely proportional to the distance of evacuation from the battle front. In August 1951, a clinical officer in psychiatry was attached to a Canadian field dressing station (F. D. S.) with good effect. This prevented the unnecessary long-distance evacuation of personnel purely for psychiatric opinion or assessment. The F. D. S. also acted as a battle exhaustion center but, due to the nature of the fighting, this type of case was uncommon as compared with campaigns of the 1939-1945 war.

Situated near the hospital was a holding unit which carried reinforcements for the Korean force together with recovered battle casualties and sick soldiers again fit for duty. A considerable screening was effected and by close liaison with the medical officer and adjutant of this unit many would-be psychiatric casualties were prevented, more often by recommending a hasty return to duty than advice to the contrary. Many of the cases referred were battle casualties who had recovered from superficial wounds and, although pronounced physically fit, persisted in complaining of impaired functions or persistent pain. A good number of these patients entertained their symptoms at a "near conscious" level. Providing, however, that this overlay did not amount to blatant malingering, it was considered advisable and advantageous to see such patients on one or two occasions for a period of psychotherapy. This was at times a rather tedious task, but such management usually paid a better dividend than a summary dismissal of the patient's symptoms (anxiety) as being imaginative or deceitful. It is quite certain that a soldier who can externalize his anxieties and fears to an ear which he recognizes as being both sympathetic and firm derives considerable benefit. His anxiety is predominantly the fear of personality

disintegration in the face of danger rather than any specific fear of death, maiming, or captivity by his enemy, and it was invariably on this theme that psychotherapy was gainfully rendered.

ENEMY ENVIRONMENT AND MORALE

The enemy, Chinese and North Koreans, inadequately supplied with artillery and air-striking power, compensated the deficit by attempting to overwhelm the opposition by gross numerical superiority. Their losses in large-scale offensives were reported to be enormous. They were most feared at night and, although initially silent in attack, during the battle they resorted to primitive methods of psychologic warfare, sounding weird and oriental bugle calls. This effect was at first eerie and nerve-racking, but, if calculated to lessen opposition morale, the result was short-lived and unimportant; certainly the matter was not stressed by patients suffering from acute psychiatric disturbances following combat, either consciously or during abreactive treatment.

The climate in Korea is extreme. The cold winter appeared to be considerably less well tolerated than the warm, humid summer months. Living conditions were extremely harsh and weeks were spent in the open. Frostbite, a preventable condition, was not common during the winter 1950-1951, but it is clear that the "cold injury" as the Americans have now labelled it, may constitute a serious problem. The U. S. authorities expressed grave concern about the high incidence in their troops, a significant number of which were considered to be self-inflicted by blatantly removing boots for a few hours or neglecting to take elementary precautions. It is probable that in future campaigns being undertaken in conditions of extreme cold the frostbite incidence will be the measure of individual, and therefore group, morale throughout the force. It is estimated that the extremely cold temperature was the soldier's greatest environmental hardship while in Korea.

Considering the many adverse factors, morale appeared to have maintained a surprisingly high standard which is reflected by the psychiatric breakdown, details of which appear analyzed below. The dissatisfaction of the reservist, the impersonal, idealistic, and remotely purposeful war, extremes of cold, heat, and boredom, together with spurious peace offers, were factors not conducive to enthusiasm.

TABLE 1.

R. T. U.	M2S3	M2S7	M2S0	Total
365 (65.8%)	112 (20.2%)	8 (1.5%)	69 (12.5%)	554

DISPOSAL OF ALL CASES INTERVIEWED

In the period of survey, 554 U. K. soldiers were referred for examination. Of these, 365 were recommended for a return to their unit; 112 were down-graded to medical category M2S3 (mental ability 2, emotional stability 3)* and therefore became employable in base areas and were not a total loss; eight men were given a category of M2S7 and 69 were evacuated to the United Kingdom. Of these 34 were psychotic, leaving only 35 soldiers who were sufficiently serious to require further hospital treatment for neurosis. It is noteworthy that during the year only 10 officers were sent for interview. Three were diagnosed as anxiety reaction in obsessively perfectionistic personalities unrelated to battle circumstances, two had symptoms of headache with mild personality change following head injury. The other five developed excessive anxiety resulting from combat experience, and in all of these severe precipitating stress had occurred. Three officers were evacuated to England for further treatment and three down-graded to medical category M2S3 for three or six months.

A diagnostic breakdown is given in table 2 below.

TABLE 2.

Anxiety state	287
Hysteria	73
Maladjusted and psychopathic personality and dullards	42
Schizophrenia	22+(? 4)
Organic reactive psychosis	1
Manic depressive psychoses	7
Nothing abnormal detected	118

A note of explanation will be given on the cases seen.

Anxiety Reactions. This was as usual the most common clinical entity encountered. The diagnostic rate is comparatively high, but many of these cases were mild and include a certain number of "dyspepsias." This type of case was often amenable to reassurance and a special effort was made to follow them up when returned to their units, either by visiting them or by inquiries through their unit medical officer. Often rather immature

*Under the PULHEEMS assessment of medical classification, mental capacity (M) may be assessed as 2, 3, 7, or 8 (2, average; 3, below average; 7, precluding service outside of U. K.; and 8, precluding all military service). Emotional stability (S) is similarly assessed; however, the degree of 6, also used, corresponds to 3 with restriction to service in temperate climates. The assessment "0" indicates the man is off duty; either in hospital or under medical care for a disability referable to the quality indicated.—*Editor*

and dependent soldiers, this personal touch gave them a helpful measure of psychologic support and security.

Acute "terror" or "panic" reactions are also included in this diagnostic group. These cases were at first surprisingly few and usually they had been adequately sedated on arrival at the base hospital. During the last few months of 1951 there was a considerable increase in cases of this nature, and almost certainly this was directly attributable to an increase in mortar and shell fire by the enemy. The diagnosis presents no difficulty—the patient is in a state of acute awareness, tremulous and uncommunicative, showing an excessive "startle reaction" to the slightest foreign auditory stimulus. The pupils are large and the alae nasi often prominently dilated, as if the relatively dormant olfactory sense is being mobilized to augment the awareness of a subject in mortal danger. Sleep is easily induced with drugs though it may be interspersed with nightmares. Sodium amytal was used more than any other barbiturate, and in this connection it should be stressed that the initial dose should be large, say 7.5 to 9 grains (0.5 to 0.6 gram), as smaller doses of this particular drug were noted to have an excitatory effect, especially in the subject who was excessively mute and tense. The further sedation varied in amount and no particular rule can be laid down, though in severe cases a minimum of two days' deep narcosis is advisable. During the waking period the patient was reassured and orientated, and if it was apparent that he wanted to talk about his battle experiences this was allowed, though no attempt was made to encourage an abreaction.

It is well known that any physical or mental condition which effects a medical evacuation from a threatening or dangerous environment will be recognized by the patient, consciously or unconsciously, as a decided asset which, however, is conflicting with his sense of duty. It is precisely this conflict that must be solved if the soldier is to be returned to duty. Indecision and inability to face this reality was noted in some cases to cause a picture of clinical depression. With the decreased intensity of anxiety the patient very often became withdrawn, solitary, and tearful. He declined food and, despite sedatives, remained awake most of the night. Though the immediate psychopathology is obvious, the intensity of the repressed emotional experience is too great to expect a therapeutic acceptance. This depressive picture was more often observed in noncommissioned officers (N. C. O.'s), where the sense of guilt was roughly proportionate to the sense of expected responsibility. On the whole the prognosis for an immediate return to duty in such cases was poor.

Hysteria. This group contained some who might well be classified as mild anxiety states, and also some postconcussional

syndromes. Many were cases referred by medical or surgical specialists for assessment. Gross hysterical dissociation with conversion symptoms were not common, but again, with the increase in mortar and shell fire, they became more numerous. Hysterical stupor, blindness, and paraplegia or monoplegia were encountered in 20 patients. All were amenable to treatment and showed a better total recovery rate than the acute panic and anxiety group.

Psychopathic Personality and Mental Defect. In the Army one is always conscious of a tendency to label soldiers as psychopathic personalities, sometimes for administrative convenience, who do not truly present behavior sufficient to justify the diagnosis. In this series 30 patients were assessed as being true psychopathic personalities (type 1 and 2), using as criteria a severe social maladjustment in both civilian and Army life with a history dating to childhood, together with an absence of a "normal" or average amount of insight. The majority of these cases presented because of pending disciplinary action and were unrelated to combat. Six patients with sexual aberrations (psychopathic personality, type 3) were interviewed, four of them again pending disciplinary action. Only six patients were considered to have an intellectual handicap justifying the diagnosis of mental defect.

Schizophrenia. This diagnosis was made with certainty in 22 soldiers, who together with four suspected cases were all evacuated to England for further assessment. Only six of these could be related to battle experience, two of which became clinically evident in the front line. Simple and paranoid forms were the commonest types of schizophrenia encountered.

Manic-Depressive Psychoses. Six soldiers were considered to have depressive symptoms with large endogenous components. They were mostly N. C. O.'s in the older age group.

RELATIVE INCIDENCE OF PSYCHIATRIC CASUALTIES

In figure 1 are graphed the total number of troops in the theater month by month as received from Field Records, British Commonwealth Forces in Korea. On the lower part are graphed the psychiatric casualties in terms of total loss to the force through evacuation to England (medical category M2S0) and partial loss through down-grading to medical category M2S3 which necessitated restriction of the soldier to base areas only. These figures will be seen to be very small.

The high relative incidence for December to April can be attributed to the presence of reservist soldiers in the force, many of whom showed a lowered tolerance for hardship, to considerable enemy activity, including two large-scale battles, and to the

stresses of the winter months. Peace talks began in July and the falling off of the casualty rate is presumably due to this, though there was still considerable patrol activity and from September there was a definite increase in mortar and shell fire.

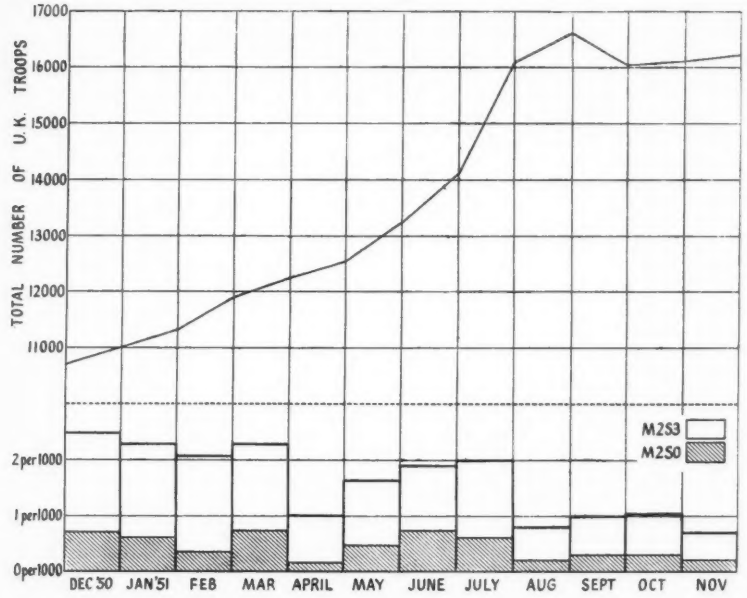

Figure 1. (A) *Graph showing psychiatric casualties per 1,000 soldiers each month. The upper level of each block indicates the total psychiatric loss. The shaded area represents those soldiers evacuated from the theater (M2S0).* (B) *Above this appears a graph representing the total number of U. K. personnel in the theater month by month.*

During the year December 1950 to November 1951 there was considerable movement of troops in and out of the theater and therefore the total monthly figures of troops reckoned as being in the theater must be taken as being below the total number who could have been potential casualties. For example, the 28th Brigade was replaced in April by battalions from Hong Kong and the 29th Brigade was being replaced during the October-November period.

It is obvious from these figures that the loss of manpower due to psychiatric breakdown was negligible and presented no major problems to the administrative authorities. The writer has not at hand for comparison the exact monthly casualty and sick rate resultant from surgical and medical breakdown, but, through observations and experience in the routine duties of orderly medical officer admitting convoys of patients directly from the battle

front, the proportion was roughly one psychiatric casualty for every 20 wounded or sick.

Some 275 cases from the Australian, Canadian, New Zealand, Indian, and South African members of the Commonwealth forces were interviewed. The personnel from these countries were almost entirely volunteers and together with some first-class material a considerable number of inadequate psychopaths and hysterics were included, whose tolerance for combat, hardship, and boredom was low. It was clear that their retention in the force would be detrimental to the morale of their particular group. Many had a previous (but undisclosed on enlistment) psychiatric history; a few members were even in receipt of pension for their "disability." The following is an analysis of all non-U. K. members of the Commonwealth force who were interviewed:

TABLE 3.

R. T. U.	M2S3	M2S0	Total
138 (50 percent)	33 (12 percent)	104 (38 percent)	275

The combined number of non-U. K. troops in the Commonwealth units is not accurately available, but it would be fair to estimate it at about one-quarter to one-third of the total force. The percentage psychiatric breakdown was therefore considerably less in U. K. elements. This point is brought out not as a claim for superiority of any one member but to illustrate the very real importance and economy of psychiatric screening and personnel selection.

TREATMENT

Apart from continuous narcosis and abreactive therapy no other physical methods of treatment were used. The technic and management of these are well known and will not be given here. Abreactions were largely confined to patients presenting hysterical symptoms, and showed some quite dramatic "cures" which invariably enhanced the reputation of the operative psychiatrist. Reassurance, suggestion, and an appeal to the soldier's sense of duty both to himself and, often more effective, to his unit are simple methods of psychotherapy which, despite an understandable scepticism because they are "simple" methods, give better results than might be expected. Psychotherapy at a "deeper level" was reserved for severe neurotics who, if recommended for evacuation to England, were confronted with a few weeks' delay. An alleviation of symptoms to some extent was usual, and any relevant psychopathology was forwarded with the patient's documents for the attention of the military psychiatrist at Netley.

SUMMARY

A brief report has been given on the incidence and type of psychiatric casualty encountered among British Commonwealth troops fighting in Korea. The breakdown per 1,000 men is almost negligible, and it is felt that this was almost certainly due to the absence of intense enemy shell fire and aerial bombing. The R. T. U. rate for U. K. personnel was 65 percent and the number of relapses was insignificant. Anxiety reactions as usual were the most common clinical entity encountered and some success with a superficial form of psychotherapy can be claimed in a number of these cases.

The importance of psychiatric screening and personnel selection has been stressed and is exemplified by a comparison of U. K. troops with troops from other Commonwealth countries.

Frostbite has been mentioned and its incidence may in future campaigns be of importance in assessing the morale of a military force.

EFFECT OF OSLER'S TEXTBOOK

Osler's textbook performed the service to medicine of wiping clean a slate cluttered with misconceptions, and of showing clearly where the field of advancement for the profession lay.

The remarkable man who had written this book was, at the time, professor of medicine at the new Johns Hopkins University Medical School. Although a Canadian by birth and a British subject, he had spent most of his teaching years in the United States and exercised even at that time as much influence as any man upon the development of medical education and, therefore, of the practice of medicine in this country. Before Osler's day, the life of the medical student was taken up with listening to formal lectures and preparing dissertations out of books about disease he had never seen. He left school armed only with booklearning and a diploma, to wrench from his helpless patients the practical knowledge his education had neglected to give him. Osler took his students into the wards and the autopsy rooms, where they saw at first hand the diseases they had read about, and he wrote articles and editorials demanding this reform in all the schools. Today this method of bedside teaching is used in every medical school in the United States.

—WILLIAM WHITE, Ph. D.
in *International Record of Medicine and General Practice Clinics*, p. 500, Sept. 1954

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Clinicopathologic Conference

U. S. Air Force Hospital, Sheppard Air Force Base, Tex.*

HILAR MASS

Summary of Clinical History. A 39-year-old man first developed symptoms referable to the left side of the thorax about the middle of October 1953 when he noted the gradual onset of a vague type of discomfort over the left anterior part of the chest, described as a feeling of pressure which was quite variable, occurring at any time without definite radiation of pain. This discomfort was not related to exertion or to changes in position. He denied dyspnea, cough, hemoptysis, night sweats, or weight loss. He did have, during this interval, soreness on motion in the left shoulder. A roentgenogram of the chest revealed an abnormality in the left hilar region for which the patient was admitted to the hospital.

The patient had been a farmer before entering military service. He had a total of 11½ years' active military duty. With the exception of a tour of duty in Japan and seven months in Nebraska he was stationed in Oklahoma and central and south Texas during his years of service. An occasional smoker, he had been bothered for many years with chronic nervous indigestion. He was treated for "nervous stomach" in 1951 after a roentgenographic study of the upper gastrointestinal tract revealed no noteworthy abnormalities. While in Japan in 1949 he was transferred to an Army hospital in the country, where he remained for three months for observation and treatment. In 1948 he had had a bilateral vasectomy at the insistence of his wife.

Physical Findings. Physical examination on admission to the hospital revealed a well-developed, tense, alert, white man who did not appear to be acutely or chronically ill. He was five feet and nine inches tall and weighed 166 pounds. The pulse was 92; blood pressure was 136/80 mm. Hg. There was no abnormal pulsation, venous distention, or palpable adenopathy of the neck. There was a questionable lid lag but no exophthalmos. The teeth

*Col. Marshall N. Jensen, USAF (MC), Commander and Chief of Surgical Service. From the Medical Service, Capt. Owen W. Beard, USAF (MC), Chief.

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were in good repair with a partial bridge. The chest was symmetrical with good and equal expansion bilaterally and no splinting. The lungs were clear to palpation and auscultation. Examination of the heart revealed no abnormality. No masses or tenderness were felt in the abdomen. Examination of the genitalia revealed a soft, cordlike mass in the left scrotum. The left testicle was thought to be slightly enlarged; there was no tenderness. Rectal examination was negative.

Laboratory Findings. After admission to the hospital, tuberculin skin tests, PPD—first and second strength; histoplasmin, and coccidioidin skin tests were all negative. Three sputum studies for tumor cells were reported as negative. Urinalysis revealed a specific gravity of 1.015, negative for albumin and sugar; and a rare white blood cell per high-power field.

The blood cell count revealed 8,000 leukocytes per cu. mm. with 64 percent neutrophils, 33 percent lymphocytes, and three percent monocytes. The erythrocyte count was 4,890,000 per cu. mm.; hemoglobin, 14.0 grams per 100 cc.; sedimentation rate, 8 mm. in the first hour. The hematocrit was 44 percent. Serum total protein was 6.50 grams per 100 cc.; albumin, 4.48; and globulin, 2.02 grams per 100 cc. A flocculation test for syphilis was negative. A bromsulphalein test revealed no dye retention. Serum bilirubin was reported as 0.0 mg. per 100 cc. in one minute, 0.2 mg. per 100 cc. total. Circulation time with ether was 0.6 second.

A posteroanterior roentgenogram of the chest revealed a mass in the left hilar region. The patient had a bronchoscopic examination, at which time the endoscopist reported the carina to be pulsating more than usual; however, it was in the midline. He also reported an extrinsic mass partially occluding the orifice of the left main bronchus. There was no evidence of an endobronchial lesion. No specimen for biopsy was taken. The left main bronchus was patent and normal below the area of this extrinsic mass.

Fluoroscopic examination by both the chief of radiology and the civilian consultant revealed the left hilar mass to transmit pulsation. An expansile type of mass could not definitely be ruled out; therefore, an angiocardiogram was performed using a 70 percent solution of sodium acetrizoate (urokon) and making films at four, eight, and 12 seconds. The radiologic report was "the lesion in the left hilus is unrelated to the vascular system *per se,* except that it may be directly contiguous with it."

Urologic consultation was obtained concerning the left testicular abnormality. It was the opinion of the urologist that the testicle did not contain a tumor but that the abnormality was due to an enlarged and inflamed epididymis.

The patient was seen in consultation by the thoracic surgeon and the civilian consultant in thoracic surgery. On 17 December 1953 a thoracotomy was performed on the left side.

DISCUSSION

Doctor Beard: We shall go through the summary of what I think are the important points noted in the protocol that we can use to attempt to arrive at a diagnosis. This is a 39-year-old white man who developed a vague feeling of pressure over the left anterior part of the chest. I presume that the onset was not sudden and the pain was not severe, because we do not have a definite date of onset. Associated with this vague feeling of pressure in the left anterior chest was a soreness on motion in the left shoulder. There were no associated pulmonary symptoms and particularly no cough, dyspnea, hemoptysis, or fever. This was a relatively asymptomatic lesion. A roentgenogram of the chest at that time showed an abnormality in the left hilar region. In the past history there are three points that may have some bearing upon the differential diagnosis. The patient was stationed in Japan where tuberculosis is quite common. He also has been stationed in Oklahoma and central and south Texas and Nebraska. Oklahoma and Texas have endemic areas of coccidioidomycosis. Nebraska, Oklahoma, and also, to some extent, Texas are more or less endemic areas for histoplasmosis, which might come up in the differential diagnosis. The remainder of the past history apparently has little connection with the present illness. There was a bilateral vasectomy in 1948 which may have some bearing upon the testicular findings as we will note later.

In the physical examination most of the findings are significant because of their absence. There was no weight loss and no cervical lymphadenopathy. The question of lid lag will have to remain questionable as to significance even if present. The lungs were clear. There was a soft cordlike mass in the left scrotum and the left testicle was thought to be enlarged. This would make us consider metastasis from a testicular tumor as a possible explanation for the hilar abnormality.

The laboratory findings again are significant only because they are practically all normal. All skin tests—histoplasmin, tuberculin, and coccidioidin—were negative. Routine laboratory findings were within normal limits. There was no anemia and no leukocytosis. The sedimentation rate was normal. The serum protein level and albumin-globulin ratio were normal. I presume the latter was obtained because they were thinking of the possibility of sarcoidosis, which will give an elevated globulin in 60 to 70 percent of patients. Serum globulin was normal. We come down to the roentgenogram of the chest which is really the main significant finding all the way along in the illness, at least as far as is noted in this protocol. The description of the hilar mass is not adequate. We should like to know whether it is infiltrating

out from the hilar region or whether it had sharp borders or just what it is. I will ask to see the roentgenograms.

Doctor Kohl:* At the time this patient complained of symptoms there was a sharply defined lesion directly related to the left hilar area (fig. 1). We were fortunate in having two previous films made in February and June 1953 which had been interpreted as normal, and even looking back to that time there was no indication of anything wrong in

Figure 1. Posteroanterior roentgenogram of chest taken 6 November 1953. The mass lesion producing a prominence in the left hilar region can be readily seen.

the hilar area at that early date. (The onset of symptoms was in mid-October 1953.) The films we have taken in November and December all show essentially the same picture. Films made on inspiration and expiration show the mass to be the same size, which would indicate that it is solid rather than vascular. A lateral film showed it to be located in the hilar area. There was no other abnormality in the lung field. There does not appear to be infiltration or extension outward. There is no shift of the mediastinum. We can see the trachea and main bronchi in some of the films, and they are not encroached upon in any manner.

*Maj. John M. Kohl, USAF (MC), Chief of Radiology Section.

Doctor Beard: Can you say whether this is a lymph node in the left hilus or a lesion in the parenchyma of the lung?

Doctor Kohl: I don't think you can say whether it is a lymph node or another mass. We do have a few other films. An angiocardiogram done on 15 December (fig. 2), and roentgenograms made with the Bucky diaphragm show the trachea and bronchial tree quite well. There is no

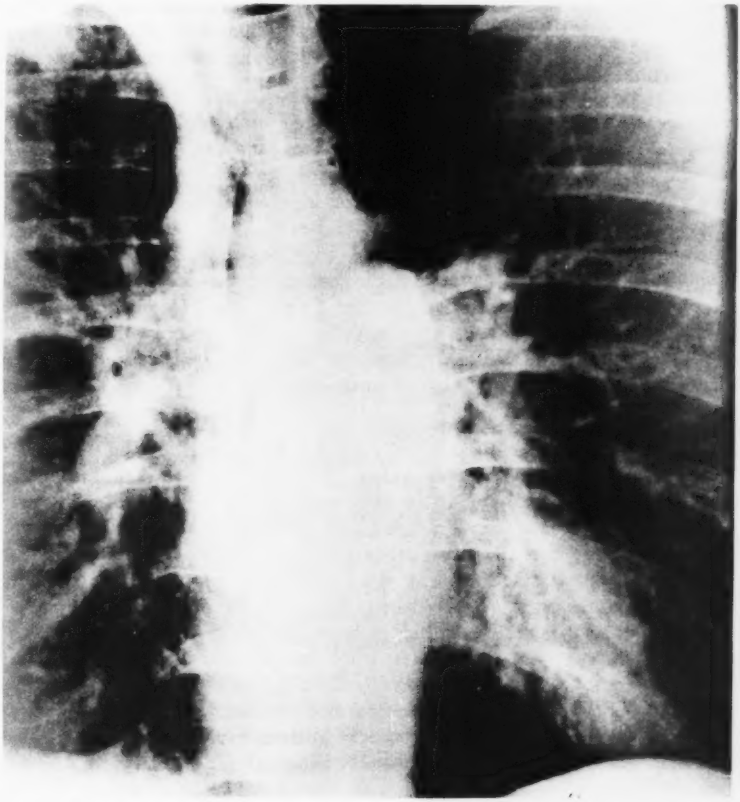

Figure 2. Angiocardiogram showing good filling of the superior vena cava, right auricle and ventricle, and pulmonary artery and its branches. This demonstrates that the hilar mass was not an aneurysm of the pulmonary artery and that the mass lesion was separate from and did not interfere with the vascular channels.

encroachment that can be seen. Sodium acetrizoate was injected and we see the superior vena cava, right auricle, and the right ventricle outlined. There is some dye in the pulmonary artery. The mass does not seem to be obstructing the pulmonary artery. It does not appear to be a vascular mass because there is no aneurysm sac filled. There is no compression of any branches of the pulmonary artery.

Doctor Beard: Thank you. The only other additional thing in the protocol that would help us is the description of the bronchoscopic examination. The carina was reported to be pulsating more than usual. However, it was in the midline. Also noted was an extrinsic mass partially occluding the orifice of the left main bronchus. There was no evidence of any endobronchial lesion. No specimen for biopsy was taken. The left main bronchus was patent and normal below the area of this extrinsic mass. The urologic consultant thought the testicular abnormality was due to an enlarged and inflamed epididymis which would certainly be compatible with the description here in the protocol.

So we have a young man, 39 years of age, with a relatively asymptomatic lesion in the left chest associated only with pressure symptoms and with some arthralgia in the left shoulder, without any significant physical findings as far as the pulmonary system is concerned, and with normal laboratory findings with the exception of the roentgenograms. In the differential diagnosis, then, we would have to consider several things because we have no group of findings that would lead us to make a definite diagnosis. In this case it is easy to make a therapeutic diagnosis. By that I mean the decision of what to do is easy. Because we can't make a definite diagnosis excluding neoplasm in this area, a thoracotomy certainly is justified and indicated. The exact diagnosis, of course, would be dependent on what was found at thoracotomy.

We can try to amuse ourselves by seeing how close we can get to the diagnosis by putting together a few of these findings. One thing we have to consider in a mass in this area would be a cardiovascular lesion. Aortic aneurysm, enlarged left atrium, and aneurysm of the pulmonary artery can all cause pressure on the left main stem bronchus. They can be excluded almost with certainty on the bronchoscopic findings because it is almost impossible for a vascular lesion, *per se,* to compress and partially occlude a bronchus without causing displacement. Of course, the angiocardiogram further helps to eliminate any vascular lesion. Teratoid tumors, thymic tumors, and intrathoracic goiters usually occur in the anterior mediastinum, so we can dispense with those. It is true that intrathoracic goiters can be located anywhere in the mediastinum but it is extremely rare in the hilar regions. Neurogenic tumors usually occur in the posterior mediastinum. Lipomas do occur in the hilar area or the mediastinal area but are extremely rare. They transmit pulsations well when present and can become very large without producing symptoms. Lipomas usually have a different appearance on roentgenograms from this tumor, giving a light peripheral zone in the form of a halo, with a dense, opaque center. So lipoma can more or less be ruled out. Bronchogenic cysts usually are found beneath the carina and attached to the trachea or main bronchus where they originate. Their symptoms consist chiefly of pain and pressure phenomena. They may move vertically on swallowing, and that was not noted in this patient on fluoroscopy. It would be unusual to have a

bronchogenic cyst obstruct the orifice of the left main bronchus because of extrinsic pressure. Pericardial cysts in this location also are quite rare.

One unusual phenomenon noted in lymphomatoid disease that is occasionally of diagnostic significance is that, in spite of considerable enlargement of the mediastinal glands, there is seldom any intrathoracic displacement. In this case all mediastinal organs, the trachea, heart, carina, bronchi, et cetera, are in normal position. This would make us consider that this hilar mass is most likely an enlarged node or nodes. For practical purposes the diseases which must be considered in the differential diagnosis in generalized or localized mediastinal lymphadenopathy are: Tuberculosis, coccidioidomycosis, lymphoblastomas, metastatic neoplasms, and sarcoidosis. We also have to consider bronchogenic carcinoma with metastasis to the lymph nodes. That is a very good possibility in this case. We can't, from the information in the protocol, definitely rule out any one of those and particularly not bronchogenic carcinoma or lymphoblastoma, so that, as I mentioned before, the therapeutic decision for thoracotomy is certainly justified at this point. If it were a malignancy I would doubt that it was a resectable one because of the close proximity of the tumor to the carina. On the other hand the information to be gained from a definite diagnosis would certainly be helpful in directing further therapy.

Now, concerning tuberculosis, tuberculous lymphadenopathy, or tuberculoma: Against the diagnosis is the fact that the skin tests are negative. That does not rule it out because I am sure many of you have had the experience of seeing a patient in whom a tuberculoma was found at operation, yet who had a negative tuberculin skin test. But the fact that the skin tests were negative would be statistically against this as a tuberculous lesion. Against the possibility of tuberculoma would be the lack of general symptoms and the normal sedimentation rate. Of course, none of these definitely rule out a focal tuberculous lesion.

Coccidioidomycosis usually is located in the peripheral part of the lung but may occur in any part, and occasionally is accompanied by hilar enlargement. Sixty percent or more of the patients will be asymptomatic. Against coccidioidomycosis in this patient is the normal sedimentation rate and the negative skin test; however, the negative skin test, as we mentioned before, does not rule it out. In a study of a series of 50 patients in whom focal pulmonary coccidioidal lesions were removed surgically, skin tests were positive in only 67 percent of all patients, in 73 percent of patients with cavitary lesions, and in 56 percent of patients with solid lesions.[1] So that leaves a fairly large percentage with negative skin tests. We cannot definitely rule out coccidioidomycosis, although the hilar location is against this being the diagnosis.

Histoplasmosis will occasionally produce a focal solid pulmonary lesion, and this patient did live in the southern area, but the negative

skin test and lack of definite evidence of a parenchymal lesion would make this disease very unlikely.

Sarcoidosis is another condition we certainly have to consider, because it can cause large pulmonary masses, both in the hilus and in the parenchyma of the lungs, and be relatively asymptomatic. It may produce only hilar node enlargement. It is a little unusual for sarcoidosis to present only mediastinal node enlargement and only in one hilus, but it can produce that picture. In one series, seven out of 52 patients with sarcoidosis had only mediastinal adenopathy.[2] Sarcoidosis interferes in some way with the delayed type of skin reaction so that a negative tuberculin skin test is the rule rather than the exception in this disease. Sarcoidosis cannot be ruled out.

One symptom, to me, is extremely interesting in relation to pulmonary disease, and if we want to make a little differential diagnosis based upon that, at least it might be entertaining if not correct. Arthralgia and osteoarthropathy with or without clubbing of the fingers associated with pulmonary disease are very interesting phenomena, unexplained it is true, but there are certain interesting differential points that may be helpful. For instance, in one series of 1,024 patients in whom pulmonary resection was performed, a study was made of the incidence of arthralgia with and without objective manifestations of clubbing of the fingers or osteoarthropathy.[3] In this fairly large series not one patient who had suppurative disease or tuberculosis had arthralgia not associated with clubbing of the fingers, or a definite finding of osteoarthropathy. So it appeared that the finding of arthralgia alone in this fairly large series was definitely in favor of a neoplastic lesion, either pleural mesothelioma or some other malignant pulmonary lesion. So,we get down to the consideration of neoplasms that could be in this area.

In the lymphoma group, we cannot differentiate clinically between Hodgkin's disease and lymphosarcoma. In tumors of the lymphoma group there is often interference in some way with antibody reactions so that it is not unusual to get a negative delayed type of skin test. Lymphoma may be the diagnosis in this case. It cannot be excluded on the information we have in the protocol. Secondary metastases to the hilus from any primary focus remains a possibility, but in the information here I have no indication for any primary neoplastic lesion. The urologic consultant was not impressed by the testicular findings; and those were the only ones which would lead us to suspect a primary lesion elsewhere. Furthermore, a patient five feet nine inches tall and weighing 166 pounds certainly had no weight loss. If he had a primary malignant lesion with distant metastasis, we would expect more symptoms. Bronchogenic carcinoma is a good possibility. A malignant lesion in this area could extend to the nodes about the hilus and can give obstruction to the bronchi. I would, if I had to make a guess in this case, guess that this is a neoplastic lesion, either a primary neoplasm of the lung or one of the lymphoma group. I don't think we can definitely rule out any of the diseases mentioned in the chronic granuloma group.

Doctor Jensen: Is there any discussion from members of the audience?

Doctor Kohl: I would like to ask Dr. Beard what percentage of the Boeck's sarcoid he mentioned had only hilar adenopathy?

Doctor Beard: I didn't say any percentage. In that series seven out of 52 patients had involvement in mediastinal nodes only. I don't remember that it was broken down as to the number having involvement in unilateral mediastinal areas.

Doctor Kohl: In my experience most cases show hilar adenopathy alone, and I think to have parenchymal infiltration is rather unusual. We went through a 10-year series of all patients with Boeck's sarcoid observed at a large institution and the incidence of pulmonary parenchymal infiltration was low. Most cases were limited to the hilar nodes, mostly bilateral, but not all. I was surprised that the incidence of hilar adenopathy was so low in that series.

Doctor Beard: That would agree with my experience in the few patients I have seen. I think that they meant this was the only finding of sarcoidosis. Most often there are other findings of peripheral nodes, skin lesions, splenomegaly, hepatomegaly, or ocular lesions. In seven of 52 patients the only finding was mediastinal lymphadenopathy. I think the incidence of mediastinal lymphadenopathy without other radiologic findings, say of a parenchymal lesion of the lung, is certainly higher than seven out of 52.

Doctor Kent:* You didn't explain in too great detail how you account for the shoulder pain. I don't know whether that is a red herring or not.

Doctor Beard: I do not know whether it is a red herring or not. We do not have any report of examinations of his left shoulder, so we do not know that the arthralgia was not due to some local disorder in the shoulder. The relationship of arthropathy to pulmonary disease is certainly an interesting one. There are many reported cases in which arthropathy was a major finding in patients with pulmonary tumors, and in whom the joint manifestations cleared completely following pulmonary resection. In several of these, recurrence of the malignancy was associated with recurrence of the arthropathy. I do not know of any adequate explanation for this association. The arthropathy is certainly not just on an anoxemic basis. Some authors have attempted to relate the arthropathy in some way to pleural involvement, because the highest incidence of arthropathy of the most severe degree is associated with those pulmonary lesions involving the pleura, such as a mesothelioma.

Doctor Jensen: Any other questions or comments?

Doctor Uram:** Here is a 39-year-old man who had a bilateral vasectomy in 1948 and five years or so later is described as having a slightly

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**Capt. Herbert Uram, USAF (MC), Surgical Service.

enlarged left testicle and a cordlike mass in the left scrotum. This, coupled with the fact that he has vague abdominal complaints and a mediastinal mass, makes me think of seminoma with mediastinal metastasis.

Doctor Beard: The findings in the testicle together with the pulmonary lesion might also suggest tuberculosis, because tuberculous epididymitis is not too uncommon a finding. I certainly agree that seminoma is a possibility.

Doctor Jensen: I believe it would be pretty difficult to have a real epididymitis with the vas ligated and divided because that is a treatment for chronic epididymitis which usually cures the disease, if it is of the suppurative infectious type at any rate.

Doctor Maltry:* He could have had a vasitis following vasectomy, and this might have been a residual finding there.

Doctor Jensen: Any other discussion or comments? If not, I believe we are ready for Dr. Fair who operated on the patient.

Doctor Fair:** I think there are several pertinent points I want to bring in that have not been discussed fully enough. I don't mean to repeat what already has been given. We get to thinking, sometimes, of carcinoma of the lung in terms of the classical textbook description when really there is no such thing. There are no absolutely pathognomonic clinical signs nor are there radiologic findings from which one can say "this is cancer of the lung." One symptom of cancer of the lung that is rather persistent and present in 90 percent of the patients is cough; after we say that, few other symptoms come into play with such consistency. When unilateral wheezing or symptoms of pneumonitis develop, the lesion has advanced so far that there is obstruction of a bronchus. Hemoptysis is present in 50 percent of the patients. Weight loss, loss of strength, and pain in the chest are late symptoms. Consequently, in cancer of the lung, it is refreshing to people who have the responsibility of carrying out definitive treatment to see the patient before all these symptoms appear. We have all seen people with primary carcinoma of the lung who are relatively asymptomatic and in whom the lesion was discovered by a routine roentgenogram of the chest. I saw this patient in consultation as did the civilian consultant in thoracic surgery, and it was our opinion that the man had carcinoma of the left lung, based on the fact that the mass was in the hilar region. My second choice was one of the lesions of the lymphoma group. You will notice on the protocol that we were so sure of the diagnosis that we operated on him five days before Christmas, and that is a time when no one wants to be in the hospital, including the doctor.

Clinical diagnosis:

Carcinoma of lung with metastasis to hilar nodes

*Dr. Emile Maltry, Civilian Consultant in Urology.

**Maj. Ellis Fair, USAF (MC), Chief of Thoracic Surgery Section.

Dr. Beard's diagnosis:

Carcinoma or lymphoma of hilar nodes

ANATOMIC FINDINGS

Doctor Fair: At operation we found a mass in the left hilar region which seemed to involve the parenchyma and adjacent nodes. It was our opinion that the lesion was a carcinoma, resectable but probably not curable. We started a block dissection high above the palpable mediastinal nodes and submitted a node to the pathologist. It might be wise for the pathologist to discuss his findings here. Then we will go ahead with the discussion of our surgical treatment.

Doctor Simon:* Fortunately, we encountered on frozen section a lesion rather easy to identify as granuloma and not tumor. We considered that sarcoid was the most likely diagnosis but could not, at that time, rule out some of the other granulomas. Subsequently, permanent sections showed extensive involvement of nodes by focal accumulations of epithelioid cells and multinucleated giant cells. Caseous necrosis was absent. A very few lymphocytes were present in the focal lesions, which tended to be sharply circumscribed. Although the focal lesions were of variable size, they showed little tendency to coalesce. Some of the giant cells contained asteroid inclusion bodies. In some areas there was considerable fibrosis, apparently the result of fibrous tissue replacement of granulomata. Acid-fast and Hotchkiss-McManus stains failed to reveal any organisms. Material from a saline suspension of the tissue was cultured on blood agar, chocolate tellurite, Sabouraud's agar, and Löwenstein's medium and inoculated into a guinea pig. These procedures failed to demonstrate a causative agent.

Doctor Fair: After we got the frozen section diagnosis we had to consider the diagnosis of sarcoid, but the mass felt like a carcinoma. We sent Dr. Simon a second node and he was consistent in his diagnosis. Then our problem was whether or not we should submit the man to a pneumonectomy for sarcoidosis or to close the chest. It was our decision not to remove his lung, because to get rid of the lesion would interfere with the vascular channels to the lung to the extent that it would require total pneumonectomy. Therefore, after submitting the nodes, we closed him. Of course, we were concerned as to whether the disease would progress, remain stationary, or regress. The man was stationed here at this base, and we obtained a roentgenogram of the chest on him some two months after operation. Do you have that here, Dr. Kohl?

Doctor Kohl: This film was taken in February 1954 (fig. 3). This is after operation, of course, and the lesion is quite a bit smaller. It is not completely gone.

Doctor Jensen: Thank you very much. Any other discussion?

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Doctor Greenspan:* In the postoperative period we thought rather seriously of treating the patient with cortisone. However, because the lesion seemed to be regressing and the patient did not want to stay in the hospital, we thought that we would have no means of evaluating its effect. Scalene node biopsy for the possibility of Boeck's sarcoid had been considered, but it was believed that this so resembled a malignant lesion that no further time should be used for diagnostic procedures.

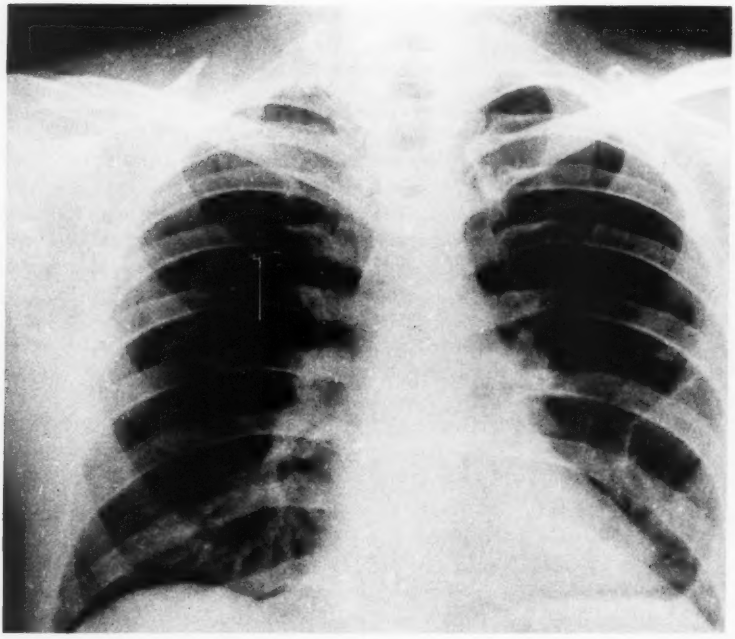

Figure 3. Roentgenogram of chest taken 5 February 1954. The lesion producing a prominence in the left hilar region shows remarkable reduction in size.

Anatomic diagnosis:

Boeck's sarcoid of hilar nodes

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Tuberous Sclerosis

Report of Two Cases and Brief Review of the Literature

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OSCAR L. SAPP, *Captain, MC, USA*
JOSEPH F. METZGER, *Captain, MC, USA*

TUBEROUS sclerosis was first described in 1880 by Bourneville as a symptom triad consisting of mental retardation, epileptiform seizures, and adenoma sebaceum, accompanied by multiple tumerous nodules of the brain. The complex was first called Bourneville's disease, but because of the "potato-like" appearance of the brain nodules and the fact that the nodules became partially or completely calcified in later years,[1,2] the disease is popularly called "tuberous sclerosis."

The disease primarily affects tissue of ectodermal origin,[1-4] such as that of the skin and brain. However, many cases have been reported in recent years in which tissues of mesodermal and even endodermal origin have been affected, such as in lesions of the kidneys, spleen, liver, thyroid, and bone. Polyposis of the colon has been reported as part of the entity.[5]

Most authors classify tuberous sclerosis with the neurocutaneous syndromes which include the Sturge-Weber syndrome, neurofibromatosis (von Recklinghausen's disease), and von Hippel-Lindau's disease.[3] All of these entities are primarily defects in tissue of ectodermal origin and many similarities of these entities are noted. Dickerson[6] has suggested that the syndrome should be described under one entity and that no clear-cut differentiations should be made.

There is a much higher percentage of reported tuberous sclerosis in Europe than in America. Ross and Dickerson[7] reported an incidence of about 0.0002 percent in the general population, and Dickey[8] found that 0.01 percent of admissions to institutions for epileptics and feeble-minded in America was due to tuberous sclerosis while Europe had an incidence of 0.6 percent. There has been no reported difference in sex incidence.

The first symptom is usually that of mental retardation.[3] The patient is slow in learning to walk or talk,[8] and in other basic developments. Cases in which there was no apparent mental

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retardation and adjustment to environment was good[1,4] have been reported, however. Epileptiform seizures may or may not become manifest, but when present they usually begin between the ages of three to six years. The seizures follow no set pattern and may be mixed (Jacksonian, grand mal, petit mal, or any combination) and may vary from one extreme to the other. Five to 10 seizures may occur daily or there may be years between episodes. The seizures can usually be controlled with the standard antiepileptic drugs,[1] although the effective doses are generally much higher than required for the usual patient with epilepsy. It should be strongly impressed on the attending physician and family of the patient that frequent and periodic blood cell counts are necessary for patients who take large amounts of antiepileptic drugs. Many cases of aplastic anemia have been reported in patients taking these drugs, and at least five fatal cases have been documented.

Adenoma sebaceum is the most common skin lesion seen in tuberous sclerosis[1] and is usually found in butterfly distribution over the nose, cheeks, and on the chin. The lesions are resistant to medical therapy but are sometimes improved with radiation. Surgical methods are sometimes employed to remove the facial papules.[1,9]

Changes in the hands and feet have been noted roentgenographically by Berland[4] and Dickerson.[6] Berland reported a series in which 65 percent of the patients showed osseous lesions of the hands and feet. The lesions are usually in the form of cyst-like changes in the phalanges, irregular cortical thickening of the metacarpal and metatarsal bones, and patchy areas of cortical thickening associated with cystic lesions. Budenz[5] noted osseous lesions of the rib, humerus, and femur.

Often a pronounced anorexia may be a major complaint but is not common enough to warrant inclusion as a diagnostic aid.

On several occasions the disease has been diagnosed by the appearance of ocular lesions. These lesions usually arise from the retina and are most often flat, gray, oval tumors.[1,3] Ocular lesions are not a consistent finding but they have been reported in as many as 25 percent of the cases.

Electroencephalographic studies by Dickerson and Hellman[10] indicate that abnormal patterns are formed in a significant number of patients with tuberous sclerosis. The percentage was higher than in institutionalized epileptics without tuberous sclerosis. However, the patterns were not specific or definite enough to be of diagnostic value.

CASE REPORTS

Case 1. A 24-year-old woman was admitted to this hospital on 1 November 1953 complaining of fever, menorrhagia, anorexia, and extreme weakness of 24-hour duration. Her past history was essentially negative and noncontributory.

Past history. The history was obtained from the patient's mother who reported that the patient was apparently normal at birth and developed normally in her early years. The mother also stated that at five years of age the patient had an illness which was rather acute in onset and with associated mental confusion and "nervousness." A private physician made the diagnosis of encephalitis. No other pertinent details were available. Following this episode the patient developed aphasia which has persisted. At seven years of age she began having convulsive grand mal seizures, apparently precipitated by emotional upsets. The family reported that the convulsions occurred more frequently through the next several years. During this period, symptoms of mental deficiency were also noted. It became obvious as the patient grew older that she was markedly retarded. She was seen by several physicians during the next several years and the general opinion was that these findings represented sequelae of the "encephalitis" incurred at five years of age.

Following the menarche, at the age of 12, the convulsive seizures become more frequent and were particularly aggravated at the time of the menses. She was also extremely nervous, cried easily, and became excited by loud or sudden noises. During the next several years she developed sudden periods of syncope which did not appear to be associated with the seizures. For this reason she was never left alone. In her late teens she sometimes limped or intermittently dragged her feet.

For five to six years prior to her admission she was given various anticonvulsant medications consisting mainly of barbiturates, but there was little or no improvement. About eight months before admission she was given three capsules daily of a combination of 0.1 gram of mesantoin (methyl-phenyl-ethyl-hydantoin) and 0.032 gram of phenobarbitol. With this medication the seizures became less frequent and the convulsions less severe. At the time the medication was prescribed, the physician advised frequent evaluations and blood cell counts. This was not strictly adhered to because of frequent changes of station required by her father, an Air Force sergeant. At the time of admission she had not had a checkup for about five months.

Present illness. The patient was in her usual state of health until 24 October 1953, at which time the mother noted large,

bluish, ecchymotic areas on the patient's trunk which became more widespread and prominent. About 36 hours before admission she developed generalized petechiae and edema of her right leg. The day prior to admission she began to have marked vaginal bleeding. This occurred 10 days after a normal period. Her temperature rose to 104° F. Later that same evening she developed a moderately severe epistaxis and bleeding from the gums.

Physical examination. On admission the patient's temperature was 102.6° F.; pulse, 136 (regular); respiration, 24; blood pressure, 110/70. She appeared acutely ill and was very restless and un-co-operative. There was a pronounced pallor of the skin and diffuse areas of ecchymosis were present over her trunk and extremities. She had the general facial appearance of a retarded child and not of a 24-year-old woman. She was unable to speak, but seemed to understand instructions. She clung forcefully to her mother and would cry out if left alone. Examination of the head was not contributory. The pupils of the eye were round and regular, but responded to light poorly. There was fresh and old blood in the nares, nasopharynx, and at the gingival borders. There was moderate gingival hypertrophy with extremely pale mucous membranes. There were many teeth missing and caries were numerous in those remaining. The skin showed splotchy areas of ecchymosis over the entire body and especially over pressure points. There were petechiae present on all four extremities and on the anterior chest beneath the left breast. The lungs were clear except for a few high pitched rales in both bases. Except for poor tone qualities and a tachycardia the heart was not remarkable. Examination of the abdomen showed poor muscular relaxation from lack of co-operation. The liver and spleen were palpable two fingerbreadths below the costal margins. The peripheral tendon reflexes were hypoactive. There was a positive Kernig's sign and a bilateral Babinski. The fingers were long and tapering. Otherwise the extremities appeared normal. Pelvic examination was deferred, but gross vaginal bleeding was present.

Laboratory findings. Complete blood cell count on admission showed 2.5 million erythrocytes; hemoglobin, 8.4 grams; and 1,500 leukocytes with 100 percent lymphocytes. Sedimentation rate was 72 mm. at the end of the first hour. Hematocrit was 20. Urinalysis (catheterized specimen) showed 1 plus albumin and 10 to 20 white blood cells. On the second hospital day the erythrocyte count was 2.4 million and hemoglobin, 8.1 grams. Urine culture was negative. Rickettsial agglutinations were negative. Six days following admission the leukocyte count was 950 with 100 percent lymphocytes. The erythrocyte count gradually fell to 1.4 million and the hemoglobin to 5.6 grams on the day of death.

Course in hospital. On the day of admission a sternal marrow aspiration was performed, and the diagnosis of aplastic anemia (pancytopenia) was made. The patient was given 300 mg. of cortisone daily in divided doses and daily transfusions of fresh whole blood. She was seen in consultation by the gynecology service and given 25 mg. of methyltestosterone in sesame oil every eight hours to suppress the profuse uterine bleeding. She was also given 30 μg. of vitamin B_{12} and 5 mg. of folic acid three times daily. No detectable change was noted during the following few days. In spite of massive doses of broad spectrum antibiotics she continued to run a daily temperature of spiking character, ranging from 102° to 104° F. Bleeding from the nose, mouth, and vagina continued, and two days prior to her death she had bright rectal bleeding. On 9 November she became much weaker and continued to demonstrate the severe hemorrhagic diathesis. Her tachycardia increased and her blood pressure became difficult to maintain above 70 mm. Hg systolic. Her general condition became progressively critical and on 10 November at 0520 hours she lapsed into coma, developed acute vascular collapse, and died.

Autopsy findings. The findings at autopsy consisted of aplasia of the bone marrow with generalized abscess formation in the heart, lungs, liver, kidneys, and brain.

In addition, the following findings of tuberous sclerosis were present. The brain weighed 1,235 grams. Scattered over the surface were gyri which were irregular, mushroom-shaped pearly white deformities with umbilicated centers (fig. 1). In other areas the gyri were of normal configuration but were pearly white blended with the underlying white matter and there was a lack of the usual stripe of cortical gray matter in these areas (fig. 2). In the white matter there were several large areas of calcification. In the horns of the lateral ventricles were numerous bead-like projections into the lumen (fig. 3). Some of these projections contained areas of calcification.

Microscopically these deformed cortical areas showed a complete and widely scattered disorganization of the usual cellular layers of the gray matter. There were numerous large and bizarre multipolar, abnormal glial cells. In the outer zone of the cortex there were coarse bands of fibers running tangentially. Sections of the ventricular nodules revealed that these were made up of coursing bands of spindle-shaped cells with large areas of calcification.

Other associated lesions consisted of a lipoma of the heart, a hamartoma of the liver, a hamartoma of the myometrium, an adenoma of the thyroid gland, and a choristoma of the kidney. This choristoma of the kidney consisted of an extension of the

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cellular perirenal fat through the capsule of the kidney. There also were islands of adult fat lying out of continuity in the kidney cortex.

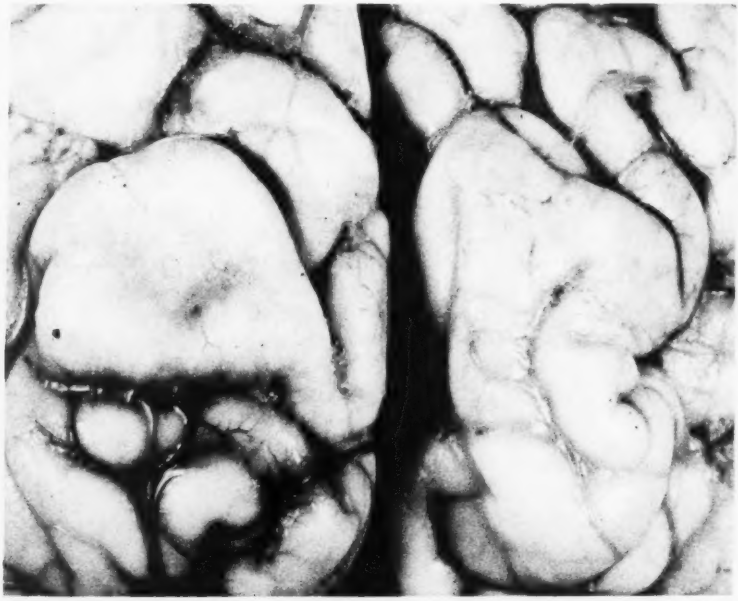

Figure 1 (case 1). A large, deformed, umbilicated gyrus can be seen on the left occipital lobe of the brain.

Case 2. A 13-month-old daughter of an officer was first seen at this hospital because of an abdominal mass. Physical examination revealed bilateral upper abdominal masses. Surgical exploration was performed and the patient was found to have bilateral polycystic kidneys. The cysts were drained and the defects repaired. The patient had several severe and unexplained convulsive seizures following surgery and frequent upper respiratory infections. At 25 months of age the patient developed many tiny lesions on the cheeks, nose, and chin which seemed to contain "dilated superficial capillaries."

At two and one-half years, while the patient was in the hospital for a checkup, the right kidney was found to be definitely palpable and "irregular" in size and shape. An excretory urogram revealed functioning kidneys with marked dilatation of the right renal pelvis and dilatation and blunting of the calyces. The facial lesion was noted again at this time and appeared to be more pronounced. Normal height, 36 1/2 inches; weight, 32 1/4 pounds;

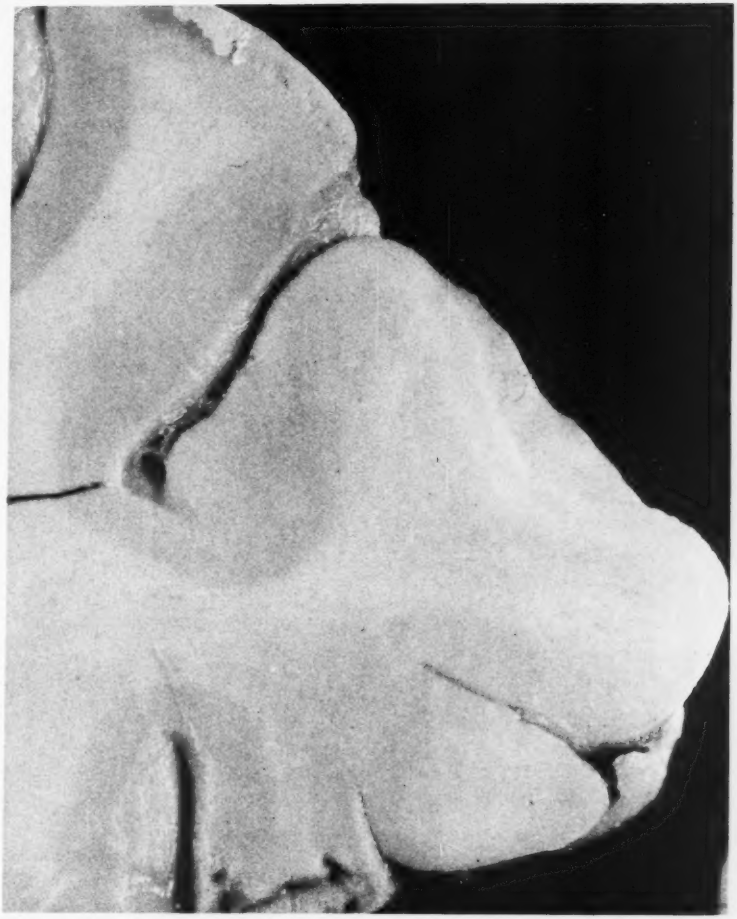

Figure 2 (case 1). Cross section of a portion of the occipital pole of the brain showing a gyrus with a large area of umbilication. The gray matter of this gyrus is pearly white and poorly defined from the underlying white matter.

and developmental progress were noted at this time. The patient was walking and talking well.

The facial lesions were identified as adenoma sebaceum (fig. 4). A diagnosis of tuberous sclerosis was made on the basis of the kidney lesions, unexplained convulsive seizures, and adenoma sebaceum.

Figure 3 (case 1). Coronal section of the brain. Bulging into the right lateral ventricle at its inferior and lateral portions are two tumor nodules. The inferior nodule has a circumscribed appearance. Also shown in the section are cystic spaces due to the postmortem accumulation of gas from bacterial growth.

Laboratory examinations, including an electroencephalogram, revealed no abnormalities except for those found previously during the excretory urogram. No intercranial calcification was detected on the roentgenograms of the skull.

At four years of age, the adenoma sebaceum had become more pronounced. It covered the nose and cheeks in a butterfly distri-

bution, and was more prominent on the chin. Roentgen-ray treatments were given, but there was no improvement. Excretory urograms performed at this time revealed a nonfunctioning left kidney and a moderately severe hydronephrosis of the right kidney.

Figure 4 (case 2). Adenoma sebaceum as noted at three years of age.

At four and one-half years of age, the patient again had several unexplained convulsions which lasted about a minute. There were no aftereffects and no history of headaches. A repeat electroencephalogram, made while the patient was awake, revealed no abnormalities.

At the present time the facial lesions are much more prominent and pronounced than ever before. They are more numerous and appear to be spreading. There is a large, firm mass deep in the right abdomen. The blood pressure has been consistently normal and the blood urea nitrogen has never been over 20. Physical examination is otherwise essentially normal.

There has been no history of mental retardation and the patient has made a very good adjustment to her environment.

We believe that the kidney lesion represents a renal hamartoma frequently seen with tuberous sclerosis. Although the patient is progressing well at present, the kidney lesions, convulsions, and adenoma sebaceum justify the clinical diagnosis of tuberous sclerosis.

COMMENT

Tuberous sclerosis is a symptom triad consisting of mental retardation, epileptiform seizures, and adenoma sebaceum. The disease primarily affects ectodermal tissues, but lesions of tissues of mesodermal origin have also been reported. It is a relatively uncommon disease, but the prominence of symptoms facilitate a comparatively easy diagnosis.

The seizures can usually be controlled with standard antiepileptic drugs, but the hemogram should be observed carefully while the patient is receiving medication of this type. Osseous lesions may be seen on roentgenographic examination in over 50 percent of the cases. Ocular lesions and abnormal findings shown in electroencephalograms may be of help in the diagnosis of the disease.

Of two case reports of tuberous sclerosis presented, one patient died of pancytopenia following drug therapy. In our opinion the existence of aplastic anemia is probably related with prolonged, uncontrolled, mesantoin therapy. We cannot state with absolute certainty that this drug was unquestionably the causative agent of the aplastic anemia in our patient, but we believe that it probably was. The other patient was followed from her first admission up to the present time.

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Subluxation of the Head of the Radius in Children

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THE "pull syndrome"[1] or "nursemaid's dislocation"[2, 3] occurs frequently and should be easily recognized and treated. The lack of discussion of this condition in several major pediatric textbooks, however, as observed by Kanter and Bruton,[4] is evidence that it has not been sufficiently emphasized.

Since August 1953, subluxation of the head of the radius has been diagnosed in three children admitted to the pediatric outpatient department of this hospital. In a fourth child, seen earlier in the night emergency room, the diagnosis was not made, although the history and clinical findings warrant inclusion in this group. During this period, ending 1 February 1954. there have been 3,891 pediatric outpatient clinic visits.

CASE REPORTS

Case 1. On 17 November 1953 the father of a four and one-half year-old girl pulled her arm in an attempt to pick her up against her will. Immediately after this maneuver the child complained of pain in the region of the elbow and due to discomfort refused to allow the father to examine it. Two hours later I saw her in the pediatric clinic. The only positive physical finding was painful supination. On reduction of the dislocation, there was an audible and palpable click. The child was immediately able to use her arm freely. A roentgenogram demonstrated no abnormality.

Case 2. A two and one-half year-old boy presented the following history on 16 December 1953. During play with an older sibling, the boy's arm was pulled with considerable force. Immediately afterward the child refused to use the injured arm; later he was restless and awoke several times during the night. The next day when I examined him, the only physical finding was painful supination. A palpable click was felt on reduction of the dislocation. The arm was then used freely and without discomfort. The roentgenographic findings were within normal limits.

From Ryukyus Army Hospital, Okinawa. Dr. Eubank is now at the Raytown Clinic, Raytown, Mo.

The past history revealed a previous episode of a like injury to the same arm. At the age of 21 months, when he was being helped from the family automobile, his arm was pulled. He became irritable and showed obvious discomfort in region of the elbow. A physician diagnosed his condition as a possible vitamin deficiency. Roentgenograms were not made. The child continued to be fretful and evidenced pain in the elbow for four days. Suddenly he began using the arm and showed no discomfort. A spontaneous reduction is the most probable explanation.

Case 3. On 18 January 1954, a three-year-old girl's arm was pulled while tumbling at play. A "pop" was heard at the time of injury. She experienced pain in the elbow region, refused to use the arm, and was restless and fretful during the night. The following morning when I examined her the only positive physical finding was painful supination. On reduction of the dislocation, a palpable click was felt and supination, free from pain, was immediately possible. A roentgenogram showed normal findings.

Case 4. During play on a swing on 23 March 1953, a four and one-half year-old boy's arm was pulled forcefully by an older child. Immediately, and for the two days following, the boy complained of pain in the elbow region and refused to use the injured arm. Medical attention was then sought and the boy was examined in the night emergency room. The only physical finding reported was painful supination, and a roentgenogram demonstrated no abnormality. Although a diagnosis of subluxation of the head of the radius was not made, the boy freely used the injured arm without pain shortly after the physician had manipulated it in examination, thus indicating reduction of the dislocation. In my opinion, the history and clinical findings in this case warrant its inclusion in this series as another case of subluxation of the head of the radius.

COMMENT

Subluxation of the head of the radius in children is an anterior dislocation of the proximal cartilaginous head of the radius through the annular ligament. It is most commonly observed in children between the ages of two and five years, and particularly in those children who are learning to walk. The history usually reveals a sudden jerk or pull at a time when the child's arm is in a position of extension, elevation, and pronation. Following the injury, the child experiences an onset of pain in the region of the elbow which causes him to hold his arm in a position of extension, adduction, pronation, and slight flexion at the elbow. Any manipulation or use of the arm is avoided. The parents may seek advice late in the evening because the child is uncomfortable when attempting to sleep.

This injury goes unrecognized many times because either the parent or physician unwittingly or unknowingly reduces the dislocation in his attempt to find the cause of the pain.[5] In one of the patients reported, a spontaneous reduction took place on a previous occasion.

The diagnosis is made by history and clinical findings. Because at this age the head of the radius is not ossified,[6] roentgenograms will not demonstrate an abnormality in position. Some roentgenograms may show a slight separation in space between the head of the radius and the capitellum. Flexion and extension of the forearm is free, but supination is sharply limited due to the pain of dislocation.

The treatment is simple and satisfactory. The child's arm is held in a position of extension while the physician grasps the distal forearm at the wrist with one hand and places the other hand at the head of the radius. The arm is gently and firmly supinated at the wrist while the thumb of the opposite hand is used to exert pressure in the area of the proximal head. Not only can reduction be felt, but an audible click is often heard. Key and Conwell[7] and other authors of orthopedic texts recommended that the child's arm be placed in a sling for several days.

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Double Urethra

URQUHART L. MEETER, *Lieutenant Colonel, USAF (MC)*

DOUBLE urethra in the male is considered a rare congenital abnormality by Slotkin and Mercer,[1] who cited De Berne-Lagarde that only 38 cases had been reported until 1932. Only scattered reports have appeared since that time. These authors also stated: "Chauvin has divided these cases into five types: (1) complete reduplication from glans to bladder (rarest type); (2) incomplete reduplication; accessory urethra ends blindly proximally and lies ventral to true urethra; (3) incomplete reduplication; accessory urethra ends blindly proximally

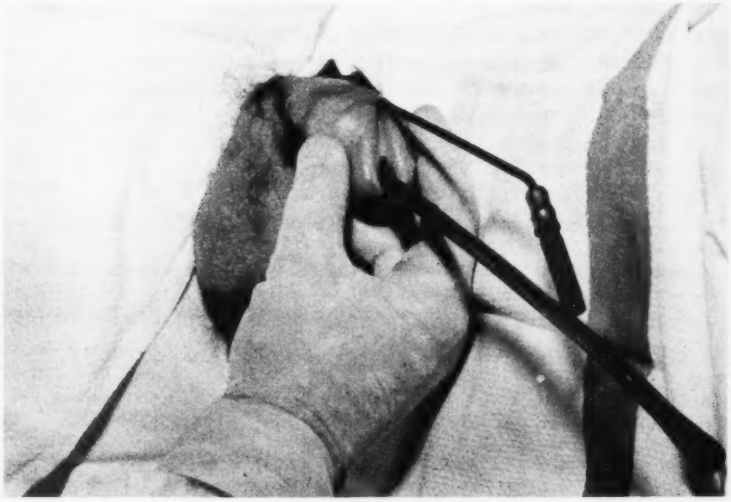

Figure 1. Photograph showing epispadic cleft with a dilator in the normal urethra and a fulgurating electrode in the accessory orifice.

and lies dorsal to true urethra; (4) Y-urethra with accessory urethra ending in true urethra distal to external or internal sphincter; (5) Y-urethra with accessory urethra opening at penoscrotal junction and joining normal urethra somewhere proximal to this."[1] The accessory urethra may also end proximally in the seminal vesicles, as noted by Fergusson.[2]

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Slotkin and Mercer believed that the most generally accepted theory of the cause of double urethra "is that the anomaly is due to a continuation of the splitting process of the urorectal septum with a consequent bifurcation of the urethral anlage into a dorsal and ventral portion, partial or complete."[1] The symptoms vary from none to incontinence, if the opening is above the sphincters; there may be dorsal angulation of the penis;[3] or a double stream of urine. If urethritis is contracted, a chronic, recurrent urethral

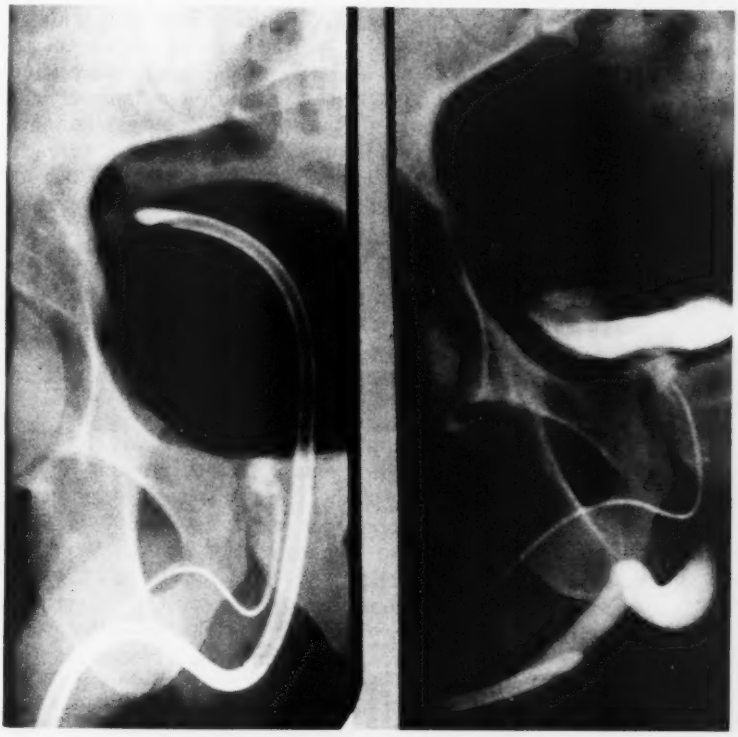

Figure 2. Roentgenograms of bladder, accessory urethra, and normal urethra showing the blind ending of the accessory urethra near the internal sphincter and the lack of communication between the two urethras.

discharge that is difficult to treat may result. Surgical treatment is indicated for incontinence or excessive dorsal angulation of the penis. Fulguration of the accessory tract may be necessary to clear a chronic discharge.

CASE REPORT

A 22-year-old man was admitted to this hospital on 22 January 1954 complaining of two openings in his penis. He had contracted

gonorrhea in December 1953. Treatment with penicillin cleared the discharge from the normally situated opening at that time, but the discharge persisted from the dorsal orifice. During the first admission the discharge responded to oxytetracycline (terramycin) irrigations. The patient was returned to duty but the discharge recurred shortly thereafter. He was readmitted on 2 March 1954.

Physical examination findings were normal, except for the penis. The glans penis had a dorsal epispadic cleft, with a normally situated external meatus and an accessory orifice at the proximal extent of the cleft as well (fig. 1). The dorsal orifice was probed to a depth of 17 cm. with a ureteral catheter. There was slight dorsal angulation of the penis. Roentgenographic examination of both urethras indicated they were not intercommunicating. The ventral urethra appeared normal, but the dorsal urethra was small and ended just under the vesical mucosa near the internal sphincter (fig. 2).

The patient's dorsal urethra was irrigated with oxytetracycline (25 mg. per cc.; 5 to 10 cc. per irrigation) four times a day and the discharge gradually disappeared. On 16 March 1954 under general anesthesia a ball-point cystoscopic electrode was passed up the accessory urethra to a distance of 17 cm. and the urethra fulgurated as the instrument was slowly withdrawn.

The patient was given streptomycin postoperatively for five days and penicillin for 15 days. In an effort to prevent an increase in the dorsal angulation of the penis due to postoperative fibrosis, he was also given cortisone as follows: 300 mg. on 16 March; 200 mg. on 17 March; 100 mg. daily from 18 March to 7 April; 50 mg. from 8 to 13 April; and 25 mg. from 14 to 21 April. A fibrous cord was noted along the course of the fulgurated urethra but this has gradually disappeared. Five months after fulguration, there was no fibrous cord and no increase in the slight dorsal angulation of his penis. The accessory orifice has closed.

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A Simplified Arteriographic Shield

FREDERICK R. LATIMER, *Lieutenant (MC) USNR*
FRANCIS PERRELLY, *Hospital Corpsman, third class, USN*

THE ADVISABILITY of adequate protective devices for those engaged in performing roentgenologic diagnostic procedures needs no comment. The mutilated hands of physicians and dentists of earlier generations offer mute testimony of the dangers involved.

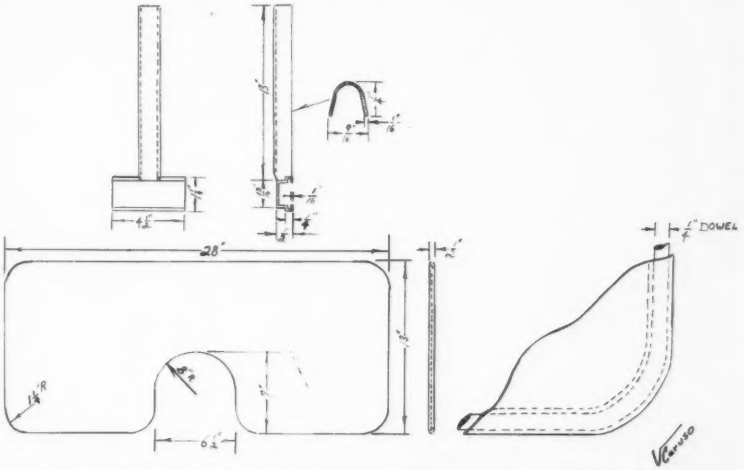


Figure 1. Diagram showing details of construction of arteriographic shield.

In July 1953 we began to perform frequent carotid arteriograms at an activity where they had not been previously done. Although the radiographic equipment was adequate, the protective devices for the personnel involved in this procedure were not. A lead apron worn by the operator afforded protection for his body but did not shield his hands nor did it offer any barrier for other persons in the immediate vicinity, *i.e.*, the anesthesiologists and technicians. Because none of the manufactured devices were readily available at this activity, we set about to construct a simple apparatus with the materials and tools at hand. An elongated cone fitting the standard tube chassis was made for us

From U. S. Naval Hospital, Camp Lejeune, N. C.

by our maintenance department and therefore our problem reduced itself to the elimination of the radiation "spray" below the cone and of the secondary radiation from the patient.

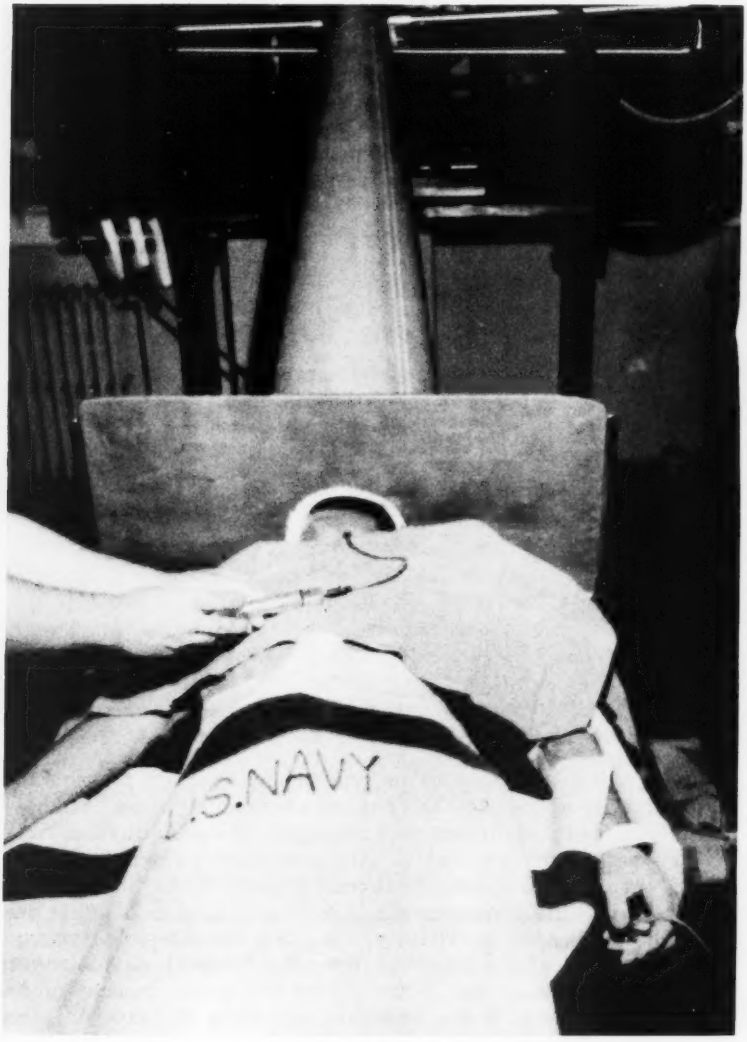


Figure 2. The shield in place prior to injection of contrast media.

With a tin-snips a piece of one-eighth-inch thick lead was fashioned in the dimensions shown in figure 1. For stability

the edges were rolled around a one-quarter-inch diameter brazing rod which had been previously bent to the desired shape. Two pieces of channel iron were welded to some obsolete table attachment slides and these then served as upright posts with the concavity directed inward. The finishing touches were added by cutting a piece of rubber laboratory tubing lengthwise and slipping it in place over the free edge of the lead in the aperture at the bottom of the shield.

Our arteriograms are done in the usual manner by inserting a needle percutaneously into the carotid artery. Using the channel iron concavities as guides, the lead shield is carefully slipped into place by lowering it down over the patient's neck prior to the injections (fig. 2). The rubber tubing over the free edges of the metal serves to protect the patient's neck from abrasion. With the barrier in place the exposures are made in the usual manner in the anteroposterior and lateral positions. The device reduces to an immeasurable minimum the amount of radiation in the zone of the operator's hands as recorded by the Victoreen r-meter.

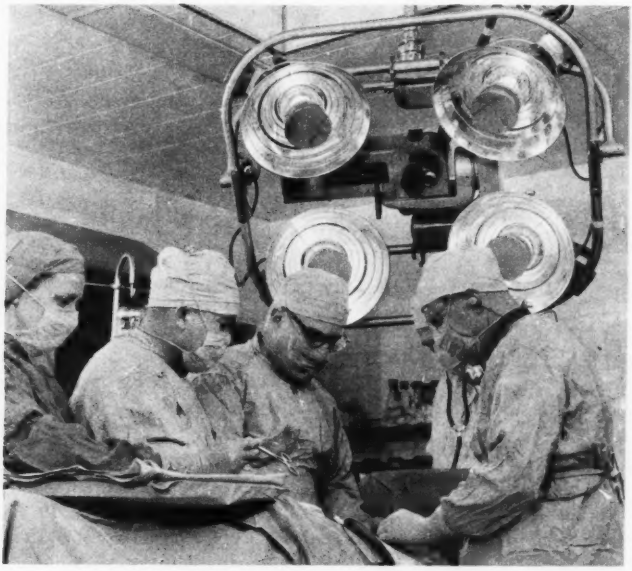
OMNIBIOTICS

The physician in practice, and many of his patients as well, are constantly on the lookout for some simple substance or formula which can be applied with universal success. The busy practitioner is particularly desirous of having some major weapon on which he can always rely to be successful in all types of infections, and which would thus relieve him of the responsibility and trouble involved in the complicated or even simple diagnostic procedures. Whenever such a cure-all has been offered it has usually been grasped with enthusiasm and widely and indiscriminately applied. The disappointment which invariably has followed has always been proportional to the magnitude of the unwarranted promises and claims that had been held out. On the other hand, the discriminate choice of therapeutic agents only on the basis of proper indication and proved efficacy for the desired purpose, though perhaps more difficult to practice, may in the long run be less disappointing and more rewarding.

—MAXWELL FINLAND, M. D.
in *British Medical Journal*,
p. 1121, Nov. 21, 1953

ARMY'S COLOR TV BRINGS OPERATIVE TECHNICS TO CLASSROOMS

A color television station, WRAMC-TV, has been installed at Walter Reed Army Medical Center for educational use at the hospital and the graduate school. More versatile than conventional audio-visual technics, color television permits instantaneous viewing of events by unlimited audiences at remote and different locations, and medical, surgical, and laboratory technics can be presented clearly, graphically, and dynamically.



Color televising of an abdominal operation at Walter Reed Army Medical Center, Left to right: Captain Ethelyn Hughes, operating room nurse; Major William C. Rountree, USAF, chief resident in general surgery; Colonel Robert T. Gants, chief of the Surgical Department; Colonel Harvey C. Slocum, chief of the hospital's Anesthesia and Operating Service; and Major General Leonard D. Heaton, Commanding General.

A 41½-pound camera is suspended in a specially designed lighting fixture. Lights and camera are synchronized so that when the surgeon has the best lighting on the field of operation, the camera, operated by remote control, will pick up the scene without obstruction. The surgeon wears a chest microphone and hearing-aid type earphone, keeping in constant communication with students in a viewing room. He lectures and answers questions as he proceeds with the operation.

PROMOTIONS OF OFFICERS

The following officers of the military medical services on active duty in the Army, Navy, and Air Force have recently received permanent promotions to the rank indicated:

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Elwyn N. Akers, *Lt. Col., USA*
Vincent J. Bagli, *Capt., USAF*
Henry M. Cook, Jr., *Maj., USA*
Longstreet C. Hamilton, *Maj., USA*
Thomas H. Hewlett, *Maj., USA*
Archie A. Hoffman, *Lt. Col., USAF*
Robert J. McCann, *Capt., USAF*
Charles L. McKeen, *Capt., USAF*
Byron G. McKibben, *Col., USA*
Joseph T. Melton, *Capt., USAF*
Alvin S. Natanson, *Capt., USAF*
Frank A. Neuman, *Maj., USA*
John C. Patterson, *Maj., USA*
Martin A. Pfotenhauer, *Maj., USA*
Thair C. Rich, *Col., USA*
Frederick J. Sheffield, *Capt., USA*
Alfred G. Siege, *Maj., USA*
Robert J. Solomon, *Capt., USAF*
Henry Thompson, *Maj., USA*
Otis L. Vaden, *Capt., USAF*
Richard J. Ward, *Capt., USAF*
Homer E. Woosley, Jr., *Capt., USAF*

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Albert M. Hollenbach, *Col., USA*
Robert D. Jeronimus, *Capt., USA*
Fredrick A. Karlson, Jr., *Capt., USA*
Franz W. Logan, *Capt., USAF*
Charles J. Mahan, *Capt., USAF*
Kenneth L. Stewart, *Capt., USAF*
James A. Turner, *Capt., USAF*
Daniel M. Vernino, *Capt., USAF*

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Richard E. Benson, *Capt., USAF*
William E. Jennings, *Col., USA*
Leslie E. Meckstroth, *Capt., USA*
Floyd E. Monroe, *Lt. Col., USA*
Richard B. Morgan, *Capt., USA*
Robert K. Nelson, *Maj., USAF*
Donald W. Ringley, *Capt., USAF*
William E. Rothe, *Capt., USA*
George H. Zacherle, Jr., *Lt. Col., USA*

Medical Service Corps

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Herbert E. Bell, *1st Lt., USAF*
Robert H. Cortner, *1st Lt., USAF*
Frank H. Dowell, *1st Lt., USAF*
Gordon Field, *1st Lt., USA*
Sheldon L. Freud, *1st Lt., USAF*
Ellis F. Hall, Jr., *1st Lt., USA*
Robert L. Little, *1st Lt., USAF*
Douglas V. Lord, *Maj., USAF*
Walter V. McIntyre, *1st Lt., USAF*
Harold D. Newson, *1st Lt., USA*
Joseph P. Rossi, *Maj., USAF*
George M. Shea, *1st Lt., USA*
Lloyd E. Spencer, *1st Lt., USA*
Joseph M. Tuggle, Jr., *1st Lt., USA*
Robert M. VanHorn, *Maj., USAF*
Allan T. Warnes, *1st Lt., USA*
William L. Williams, *1st Lt., USAF*

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Mary L. Bradley, *1st Lt., USA*
Mary I. Couch, *1st Lt., USA*
Muriel E. Eckelberg, *Capt., USA*
Eleanor M. Garen, *Maj., USA*
Elsie K. Hoin, *Maj., USA*
Mary F. Hyman, *Maj., USA*
Rhoda U. Jahr, *Maj., USAF*
Elizabeth M. Kennedy, *1st Lt., USAF*
Margaret E. McKenzie, *Maj., USAF*

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The following officers have been promoted to the temporary rank indicated:

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Ralph K. Brooks, *Comdr., USN*
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Robert R. Burwell, *Capt., USAF*
Edward T. Byrne, *Capt., USN*
Claiborne L. Courtright, *Capt., USAF*
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Marlin L. Hauer, *Capt., USAF*
Jacob G. Hebble, *Capt., USN*
David Katz, *Capt., USAF*
Leroy L. Kenney, *Capt., USN*
Donald M. Lepere, *Capt., USAF*
Alva E. Miller, *Col., USA*
William I. Neikirk, *Comdr., USN*
Byron A. Nichol, *Col., USA*
Reuben H. Nichols, Jr., *Capt., USAF*
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Paul J. Rosen, *Capt., USAF*
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John T. Zabriskie, *1st Lt., MSC, USA*

*Oak Leaf Cluster.

The names of officers of the medical services who have been awarded decorations by the United States Army, Navy, or Air Force are published in this department each month following receipt of information from official sources.—*Editor*

REGULAR DENTAL CORPS OFFICERS CERTIFIED BY SPECIALTY BOARDS

The American Board of Prosthodontics

The American Board of Prosthodontics, established in 1946 with the approval of the American Dental Association, on 31 August 1954 had certified 163 dentists in this specialty of whom 37 were regular Dental Corps officers of the military services:

Leslie R. Allen, *Lt. Col., USAF*
William P. Barnes, Jr., *Lt. Col., USA*
Roy L. Bodine, Jr., *Col., USA*

Judge C. Chapman, *Lt. Comdr., USN*
Henry A. Collett, *Comdr., USN*

Walter W. Dann, *Comdr., USN*
Lynn C. Dirksen, *Col., USA*
David P. Dobson, *Comdr., USN*

Louis Emory, *Lt. Col., USA*
Pierre O. Evans, *Lt. Col., USA*

James Fairchild, *Lt. Col., USA*
George B. Foote, *Lt. Col., USA*
William M. Fowler, *Capt., USN*
Arthur L. Frechette, *Capt., USN*

Alvin H. Grunewald, *Capt., USN*

Charles D. Hemphill, *Comdr., USN*

Frank E. Jeffreys, *Capt., USN*
Frank C. Jerbi, *Lt. Col., USA*

Stephen T. Kasper, *Capt., USN*

Ellsworth K. Kelly, *Col., USA*
Frank M. Kyes, *Capt., USN*

Charles W. Miller, *Comdr., USN*
Gordon L. Miller, *Comdr., USN*
Paul A. Miller, *Lt. Col., USA*
Marion L. Mills, *Col., USA*

James B. Neil, *Lt. Col., USA*
John V. Niitanen, *Comdr., USN*

Benjamin W. Oesterling, *Capt., USN*
Edmond S. Olsen, Jr., *Lt. Col., USA*

Mack L. Parker, *Comdr., USN*

Jack H. Sault, *Capt., USN*
Julius C. Sexson, *Lt. Col., USA*
Edwin H. Smith, Jr., *Lt. Col., USA*
John B. Stoll, *Comdr., USN*
Harold L. Superko, *Comdr., USN*

Herbert J. Towle, *Comdr., USN*

Robert L. Walsh, *Lt. Col., USA*

This is the third of a series. The names of officers certified by the American College of Veterinary Pathologists and the American Board of Veterinary Public Health will be published in the April issue.—*Editor*

DEATHS

EVANS, David Sproul, Lieutenant Colonel, USAF (MC), U. S. Air Force Hospital, Parks Air Force Base, Calif.; graduated in 1931 from the University of Western Ontario Faculty of Medicine, London, Ont.; appointed first lieutenant in the Army of the United States 17 January 1934; commissioned a lieutenant colonel in U. S. Air Force 20 April 1949; died 22 January 1955, age 53, at Parks Air Force Base of cerebral hemorrhage.

KAUFMANN, Doris Janet, Lieutenant (NC) USNR, U. S. Naval Auxiliary Air Station, Chincoteague, Va.; graduated in 1942 from the Norwegian American Hospital School of Nursing, Chicago, Ill.; appointed lieutenant, junior grade, June 1951 and ordered to active duty 26 July 1951; died 5 January 1955, age 35, at the U. S. Naval Hospital, Portsmouth, Va., of pulmonary embolism.

A MESSAGE FROM THE A. M. A.

In his state of the Union message to the eighty-fourth Congress on 6 January 1955, President Eisenhower covered a number of specific items which dealt with our national defense requirements and military planning. It is believed that a review of some of these and of those in his military manpower program message of 13 January will be of particular interest to those physicians now on active military duty or who anticipate being called into service in the near future.

In his state of the Union message, the President pointed out certain fundamentals underlying the administration's foreign affairs and military program. (1) He reiterated that our national goals are a realistic limitation of armaments and an enduring, just peace; that there is no alternative but to maintain a powerful military force which, although designed for deterrent and defensive purposes alone, is able instantly to strike back with destructive power in response to an attack. (2) He cautioned that we must keep in our armed forces balance and flexibility adequate for our purposes and objectives. We should not place undue reliance on one weapon or prepare for only one kind of warfare because such a course would only invite an enemy to resort to another type of action. (3) He advocated keeping our armed forces abreast of the advances of science in order that they may effectively utilize the new weapons and technics created through our research and development programs.

It is significant to note that the message clearly pointed out that the emphases of defense planning were made at the President's personal direction after long and thoughtful study.

To attain these fundamental goals, he indicated that the budget for military requirements would stress modern airpower in the Air Force, Navy, and Marine Corps with increased emphasis on new weapons capable of rapid and destructive striking power. In brief, it would appear that our national defense will be geared to newer types of planes and airpower coupled with weapons in the atomic and hydrogen class. This could also include the field of long-range guided missiles. He further indicated the planning contemplates the strategic concentration of our strength through redeployment of our forces. In addition, it provides for reduction of forces in certain categories and their expansion in others, to fit them to the military realities of our time.

From the Council on National Defense of the American Medical Association. The views and opinions expressed are not necessarily those of the Department of Defense.—*Editor.*

The President urged the enactment of legislation to extend for four years the Selective Service Act which expires 30 June 1955, in order to continue to induct men for two years of military service. He stated that for the foreseeable future, our standing forces must remain much larger than voluntary methods can sustain. He also suggested legislation designed to encourage military personnel to remain in active service through measures which would provide more adequate medical care for dependents, survivors' benefits, more and better housing, and increases in military pay and other allowances.

In his military manpower program message, President Eisenhower made the following recommendations for the armed forces:

1. Continue for four more years the draft law under which men 18½ through 25 can be called for 24 months' active military duty.

2. Extend the special "Doctor Draft Law" for two years. The President stated: "In the case of doctors and dentists I recommend that the extension be for another period of two years only. By that time it is expected that the medical personnel requirements of the armed forces can be met adequately by other means."

3. Creation of a new reserve program to be divided into two groups: one organized and ready for immediate mobilization; the other, consisting of men with prior active service, nonorganized and subject to selective recall. Service in the reserves would be compulsory.

4. Create a new training program for persons 17 and 18, who would serve for six months at a pay of $30 per month and then go into the active reserves for nine and one-half years.

5. Send men volunteering for the National Guard through an initial period of basic training in the active forces.

6. A selective pay boost averaging 6.7 percent. Career men and specialists would get most. No raises would be given during the first two years of enlisted service or the first three years as an officer.

7. A new "dislocation" allowance for servicemen with families transferred to a new permanent duty station.

8. An increase in the travel allowance from $9 to $12 per day.

9. More housing for service families and lower rentals where substantial housing is furnished.

10. Better medical care for servicemen's families and an equalization of benefits for survivors of military personnel.

THE MEDICAL OFFICER WRITES

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Reviews of Recent Books

WARTIME PSYCHIATRY, edited by *Nolan D. C. Lewis,* M. D., and *Bernice Engle,* M. A. 952 pages. Oxford University Press, Inc., New York, N. Y., 1954. Price $15.

A compilation of abstracts of 1,166 articles and 28 books, this volume covers many aspects of the international literature on psychiatry between 1940 and 1948. It represents a sincere effort to provide a timely and valuable reference book for military and civilian psychiatrists. For the purpose of aiding the "organization and effective use of knowledge in the prevention, diagnosis, and treatment of psychiatric disabilities," the authors have divided this compendium into 14 sections covering such subjects as aviation psychiatry, psychosomatic problems, psychosis, psychoneuroses, special therapies, problems of combat, and the psychiatric team concept. Over 200 articles deal with the problems of selection, induction and training, and those of demobilization and rehabilitation. Many articles describe the legal, criminal, sexual, and "psychopath" aspects of wartime psychiatry.

The well-written abstracts give the scientific reader essential information for a comprehensive understanding of many different psychiatric problems. Each section is prefaced by a brief statement giving some of the important scientific principles derived from the ensuing articles.

Certain defects are present but do not detract from the intrinsic value of the book. The absence of a subject index makes it difficult to identify all of the articles dealing with one subject. Although a real effort has been made to organize the material, only a general categorizing of major subject matter has resulted. At times extraneous literature crops up where least expected. At other times abstracts dealing with the same subjects are widely separated from each other. Articles by the same author often present similar information so that one or more could have been deleted or indexed as further reference material.

The experienced observer readily recognizes from the multitude of published articles that war conditions involve a transient period of marked confusion, indecision, and vacillation over the proper technics for handling psychiatric problems involving large numbers of persons. He further recognized that many of the principles of wartime psychiatry, previously established as valuable and effective, repeatedly undergo a process of rediscovery. These facts emphasize the need for the preparation of a general treatise on the principles of wartime psychiatry. Therefore, interested investigators should use this book to review and analyze the wartime psychiatric problems presented, and

to establish general principles once and for all. This compendium is highly recommended as a necessary reference book which should be available not only in all military and civilian medical libraries but also at command levels for study and evaluation by those persons who play definite roles in establishing the effective use of a nation's manpower. —*LUCIO E. GATTO, Col., USAF (MC)*

HYPERTENSION AND NEPHRITIS, by *Arthur M. Fishberg*, M. D. 5th edition, enlarged and thoroughly revised. 986 pages; 49 illustrations. Lea & Febiger, Philadelphia, Pa., 1954. Price $12.50.

The fifth edition of this well-known and respected book is the first revision since 1939. Hypertension and nephritis are surveyed in their broadest aspects and discussed fully from the standpoint of vascular function, and diagnosis and treatment are emphasized. Seven new chapters and a total of 207 pages have been added. The list of references following each chapter is complete and well arranged. The style is clear, direct, and in logical sequence, with each subheading complete, including reference where applicable. There are few illustrations and charts, which is regrettable.

Many references are made to items that are of historic interest only. The author presents the development of the accepted concept of these conditions with as full an explanation as possible. This enhances the value of the book in many instances, especially where newly developed ideas have caused a revision of previously accepted ones. A partial list of subjects discussed includes recent work on pathogenesis of hypertension, necrotizing nephrosis, diabetic glomerulosclerosis, diabetic retinopathy, malignant phase of essential hypertension, artificial kidney, and newer pharmacologic remedies.

The book is of value to those concerned with these conditions, and will serve well as a textbook and reference book on the subject.

—*WILLIAM S. GEORGE, Col., MC, USA*

VERTEBRATE DISSECTION, by *Warren F. Walker, Jr.*, Ph. D. 331 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1954. Price $3.50.

This laboratory manual is designed for students of biology as a guide to the dissection of certain vertebrate species and for use in the study of major transformations that have occurred during evolution. It is not an encyclopedic text but it includes directions, printed in bold type, for the dissection and examination of various specimens in the laboratory. The illustrations are clear, well labeled, and readily understood. In the first three chapters the lower chordates, the lamprey, and the evolution and external anatomy of vertebrates are discussed. In subsequent chapters the various systems are described in which the differences in fishes, primitive tetrapods, and mammals are covered.

It is believed that this book forms an excellent dissection guide and generally accomplishes the objectives of the author.

—*THOMAS C. JONES, Lt. Col., VC, USA*

TEXTBOOK OF ORGANIC MEDICINAL AND PHARMACEUTICAL CHEMISTRY, 2d edition, edited by *Charles O. Wilson,* Ph. D., and *Ole Gisvold,* Ph. D. 805 pages; illustrated. J. B. Lippincott Co., Philadelphia, Pa., 1954. Price $10.

This textbook is for undergraduate pharmacy students who have completed one year of organic chemistry. In general, the methods of synthesis and chemical relationships are discussed adequately. The chapters on "physiochemical properties in relation to biologic action" and "metabolic changes of drugs and related organic compounds in the body (detoxication)" are particularly valuable. It seems unfortunate that the attempts to classify drugs, sometimes according to their chemical properties and at other times according to their pharmacological actions, has led to overlapping, confusion, and inaccuracies. Dicumarol and related substances are discussed in the chapter on proteins, as are dextran and heparin, although heparin also is discussed in the chapter on carbohydrates. A chapter on heterocyclic compounds includes a section entitled plant alkaloids, but only a few alkaloids are discussed, other chapters containing the information on morphine, quinine, atropine, and many others. The section on the purines omits 6-mercaptopurine and adenylic acid which are to be found in the chapter on proteins.

Sometimes a disproportionate amount of space is devoted to older, less useful drugs; more space is devoted to the cinchona alkaloids in the chapter on antimalarials than to all the newer drugs. As in many such texts the pharmacological discussions suffer from brevity and lack precision, as for example, the statement (pages 231-232) that barbiturates cannot cause addiction. There are a number of errors in typography (mercaptopurine, page 736; glucose, page 594; salicylic, page 600; chloresium, page 215) and in bibliographic citation (on page 308, K. K. Chen instead of Chen and Schmidt; on page 325, reference 8 missing). On pages 461-462, acetophenetidin and acetanilid are listed as N. F.; on page 494, sulfapyridine is listed as U. S. P., and, sulfaguanidine and ephedrine are listed on pages 493 and 308 respectively as N. F.

It is to be hoped that careful editing of future editions will eliminate these errors, in an otherwise satisfactory, comprehensive, and well-written book.—*PAUL K. SMITH, Col., USAFR (MC)*

THE YEAR BOOK OF ENDOCRINOLOGY (1953-1954 Year Book Series), edited by *Gilbert S. Gordan,* M. D., Ph. D. 390 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1954. Price $6.

This book is a most practical and useful collection of abstracts from the world-wide literature for 1953 in the field of endocrinology. Endocrinology has made such great strides in recent years that nearly every practitioner of the various specialties in medicine and surgery becomes involved in this intriguing and interesting field.

The subject matter has been arranged according to the various endocrine glands and sex organs, plus an excellent series of abstracts from articles on carbohydrate metabolism and diabetes mellitus, as well as a summary on endocrine treatment of neoplastic diseases. Even though this book is a compilation of abstracts by various research workers, the material is arranged coherently and more or less according to subtitles. A few representative illustrations and graphic charts are also included.

One of the most valuable features is the editorial comment following most of the more important or controversial papers presented. This book is recommended for all students and physicians interested in the most up-to-date information in the field of endocrinology. It would not serve as a reference book, but it does present a great deal of practical information in concise form.— *URHO R. MERIKANGAS, Col., MC, USA*

BABCOCK'S PRINCIPLES AND PRACTICE OF SURGERY, edited by *Karl C. Jonas,* M. D., M. S. (Surg.) 2d edition. 1,543 pages, with 1,006 illustrations and 10 color plates. Lea & Febiger, Philadelphia, Pa., 1954. Price $18.

This is an extensive revision of the standard textbook of surgery, "Principles and Practice of Surgery" by W. Wayne Babcock, Emeritus Professor of Surgery at Temple University School of Medicine, which was published in 1944. The book provides the student with an organized presentation of general surgery and the surgical specialties. The contributors have presented complete subjects in a clear and thorough manner. Emphasis has been placed on surgical diagnosis and treatment with minimal comment on details of technical procedures.

Recent advances in general surgery and the basic concepts have been included in the subject matter. A section on military surgery provides the potential medical officer with a working knowledge of military medicine and outlines the management of the wounded. Thoroughness of the subject matter is attested by the up-to-date chapters concerning the fast advancing fields of cardiac, vascular, and thoracic surgery including the surgical treatment of pulmonary tuberculosis.

One hesitates to find fault with a work of such general excellence. A typographical error on page 802, causes dihydrotachysterol (AT 10) to be referred to as, "a potent vitamine A derivative." This will confuse the medical student who has been taught that AT 10 is a derivative of a provitamin D, one stage before the formation of vitamin D in the process of its development.

Every library for medical students and every physician interested in general surgical conditions should own a copy of this comprehensive surgical text. The illustrations are good, it is adequately indexed, and there is an excellent bibliography at the end of each chapter.

—*HERBERT T. BERWALD, Col., MC, USA*

ARREST OF BLEEDING, by *Jacques Roskam,* M. D. 71 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1954. Price $2.75.

In this monograph the author presents a general but refreshing view of spontaneous hemostasis, despite a probable over-simplification of the problem, after exposure to the barrage of eponymic abbreviations found in hematologic literature. The subject matter deals with an analytic study of spontaneous hemostasis, technics and methods pertaining to bleeding time, physiologic study of spontaneous hemostasis, pharmacology of hemostatic agents, consideration of bleeding time in major and minor hemorrhagic disease, prophylaxis and general treatment of hemorrhage, and treatment of thrombosis.

The text is lucid and the presentation smooth. Twenty-one figures of various types aid in emphasizing the salient features of the monograph. No index is given but its absence is not missed. Eighty-three separate references, of which about 32 percent are in the United States and British literature, are listed.

Outstanding features are the statistical approach to bleeding time and the use of the "mean bleeding time." Concise definitions of "hemophilic" and "hemogenic" syndromes are given. The paradoxical effects of adrenalin on hemostasis are elucidated. Experimental basis for rejecting the use of cold and heat in the treatment of bleeding is afforded. Some of the medications of interest in the general treatment of hemorrhage discussed are adrenoxyl, naphthoquinones, sympathomimetic amines, pitressin, and certain blood coagulants.

The monograph is stimulating and should prove of value not only to the internists but to any physician concerned with the problem of bleeding. It will make a fine companion piece to Quick's *The Physiology and Pathology of Hemostasis,* which is listed in the bibliography.

—*ARCHIE A. HOFFMAN, Lt. Col., USAF (MC)*

FUNDAMENTALS OF OTOLARYNGOLOGY, by *Laurence R. Boies,* M. D. 2d edition. 487 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1954. Price $7.

This excellent book is the second edition of a concise manual on the diseases of the ears, nose, and throat. It is divided into 33 chapters, with a new addendum on "Transudate Disorders in Otolaryngology." The bibliographic references are well chosen and listed at the end of each chapter. Style, format, type, and organization make for ready reference and easy reading. Drawings and illustrations contribute remarkably well to an understanding of the text content. Each chapter presents the etiology, pathology, symptomology, and generally accepted treatments. A thorough revision and some additions have been made by the author to bring the book up to date.

This book is highly recommended for the medical student, the general practitioner, and all medical officers regardless of their specialty.

—*WALLACE E. ALLEN, Comdr. (MC) USN*

PSYCHOLOGY IN NURSING PRACTICE, by *Lester D. Crow,* Ph. D.; *Alice Crow,* Ph. D.; and *Charles E. Skinner,* Ph. D. 2d edition. 435 pages; illustrated. The Macmillan Co., New York, N. Y., 1954.

This edition has been completely reorganized in both content and style. It is the authors' intent to "present the fundamentals of human behavior and human inter-relationships in such a way that they have particular significance to the student nurse." The appendix includes the professional code for nurses, and the reference list is up to date and varied. Material is made more meaningful by use of results obtained from pertinent scientific studies.

The expectation that a nurse should excel not only in mechanical skills, but also in the art of conversation and other social sciences is emphasized. The following statement, however, makes one wonder if the authors are thoroughly familiar with nursing trends: "When the bedridden patient is the only occupant she (the public health nurse) may render greater comfort by running an errand . . . or by cooking and serving a meal than by giving a bedbath." Does a person call a carpenter for a leaking pipe? Would not a part-time domestic servant do a better job in this instance and at less cost to the patient or community? Could not the nurse be released to serve a greater number of people if in turn she taught the servant to give the bedbath?

In reading this book, one gains the impression that the ideal nurse is a God-like person who knows just what to do and say at just the right time. Although it is mentioned, I believe that much more stress could be placed on the necessity of accepting one's own feelings and emotions. Once these are recognized and accepted a nurse could function at top-level efficiency regardless of her feelings.

This book could best be used as a stepping stone for further study. Areas of controversy would make good subject material for class discussion if used by an instructor who was well grounded in psychology and nursing sciences.—*LEONA WEINER, First Lt., ANC, USA*

WHY WE BECAME DOCTORS, edited by *Noah D. Fabricant,* M. D. 182 pages. Grune & Stratton, Inc., New York, N. Y., 1954. Price $3.75.

This is a book to be nibbled. It is a paramedical discussion of the circumstances which led many great physicians to enter their profession. Although we speak of medicine as a "chosen" profession, it is apparent from this book that happenstance and propinquity have their roles in the student's determination that he should become a doctor.

This volume should be available at bedtime as a sort of mental snack before sleep. It may also be taken b. i. d., p. c. Like salt, it is wonderful with other foods, but quickly satiates the taste if too much is taken at one time. It is a book that stimulates some honest evaluation of the reader's own motives in "choosing" medicine. It will open a door to further study of the fascinating history of medicine.

—*VINCENT M. DOWNEY, Lt. Col., USAF (MC)*

PLAGUE, by *R. Pollitzer*, M. D. 698 pages; illustrated. World Health Organization, Palais Des Nations, Geneva, Switzerland, 1954. Price $10.

This comprehensive, thorough, and up-to-date monograph on the plague problem is useful for clinicians, epidemiologists, and workers engaged in plague research. Not a revision, it modernizes and replaces the most recent publication in the English language concerning plague which was compiled in 1936 by Wu Lien-teh, J. W. H. Chun, R. Pollitzer, and C. Y. Wu.

The recent spectacular advances in the treatment and control of the disease are ably incorporated in the text from various studies by the author previously published in the *Bulletin of the World Health Organization* and revised, grouped, and reprinted in single book form. While the incidence of plague has markedly decreased within recent years, and in some of the endemic centers has ceased to be manifest, the author clearly points out that it is not yet possible to be complacent about the plague situation in the world today, even though modern scientific advances have shown that the "Black Death" is now both a normally curable and a thoroughly controllable disease. The vast primary reservoir of infection among wild rodents throughout certain areas of the world apparently will remain unassailable for a long time and concerted efforts to combat the disease must continue unabated.

The book is well documented, both the index and chapter references being internationally complete; hence the usefulness of this modern book as a complete reference work on the subject of plague.

—*WALTER R. deFOREST, Lt. Col., MC, USA*

PRACTICE OF ALLERGY, by *Warren T. Vaughan*, M. D., revised by *J. Harvey Black*, M. D. 3d edition. 1,164 pages; illustrated. The C. V. Mosby Co., St. Louis, Mo., 1954. Price $21.

This textbook of allergy is a comprehensive, well-written, authoritative coverage of the subject. Throughout the volume extensive changes have been made from the previous edition. New material has been added, including discussions of the use of cortisone and ACTH, pulmonary function tests, and treatment of poison ivy dermatitis. The chapters on aerobiology and pollen surveys and the discussion of allergy associated with fungus infections are excellent. In the section on coseasonal pollen therapy, however, the text is incomprehensible.

The author is careful to present several points of view on controversial subjects. For example, the lack of reliability of skin tests to foods is stated, but the fact that many allergists still use them and "find them helpful" is presented without comment. This approach makes the book particularly suitable as a reference volume for the general practitioner and internist not practicing allergy exclusively. An extensive bibliography, good index, and detailed table of contents increases its value as a reference book for actual treatment of patients with allergy.—*WARREN H. DIESSNER, Col., MC, USA*

THEORY AND PROBLEMS OF ADOLESCENT DEVELOPMENT, by *David P. Ausubel,* M. D., Ph. D. 580 pages. Grune & Stratton, Inc., New York, N. Y., 1954. Price $10.

This volume presents an excellent formulation of a consistent theory of adolescence and includes general principles of developmental psychology in a manner which should stimulate further research and the formation of empirical conclusions to test their validity. The author has drawn well on the research of the past half century. The emphasis on a need for more systematic attention to preliminary experimentation to test strict theories is a welcome departure from the large-scale, long-range studies on poorly integrated hypotheses in the study of adolescent development.

Focusing on the unique characteristics of the adolescent phase of personality growth, the author presents a dynamic concept that includes the cultural influences and stresses on the developing individual personality. The process of reorganizing personality aspects, particularly during adolescence, manifests certain basic uniformities from one culture to another because of common elements in the psychology of transition, as well as psychosexual maturation, the biologic role of sex, and the new traits associated with adult status in the community.

Extensive, well-selected references are included as well as a bibliography at the end of each chapter. Well written and organized, the book is considered to be very suitable as an advanced text in adolescent psychology for graduate students, and highly desirable as a reference library item for psychiatrists, clinical psychologists, social workers, and pediatricians.

—*FREDERICK A. ZEHRER, Lt. Col., MSC, USA*

ADMINISTRATIVE MEDICINE, edited by *George S. Stevenson,* M. D. 164 pages. Josiah Macy, Jr. Foundation, New York, N. Y., 1954. Price $3.

This volume is comprised of transactions of the second conference of a series of conferences on administrative medicine by a group of about 20 outstanding leaders in this field. Among the conferees were representatives of most of the branches of medical science concerned with the administration of medical affairs.

The subtopics also discussed were: main components of administrative medicine, home-care programs, and the health services of the Department of Health for Scotland.

The transactions of this conference serve to focus attention on the great need for improvements in the field of administrative medicine and this book should prove of interest and value to those concerned with the administration of all types of medical programs. This volume should be of great value to the graduate student who is preparing for future assignments in the field of administrative medicine.

—*LUCIUS G. THOMAS, Col., MC, USA*

LEGAL MEDICINE, Pathology and Toxicology, by *Thomas A. Gonzales*, M. D.; *Morgan Vance*, M. D.; *Milton Helpern*, M. D.; and *Charles J. Umberger*, Ph. D. 2d edition. 1,349 pages; illustrated. Appleton-Century-Crofts, Inc., New York, N. Y., 1954. Price $22.

This new edition will continue to be the standard American reference in legal pathology and toxicology, and is a required working text in any medical laboratory. The revision includes recent developments, but the basic pattern of the book is unchanged. It aims at the development of medicolegal data from all sources, indicates conclusions of fact, and briefly touches on the related points of law. Because it is based on experience in New York City, the quantity and quality of material and the way it is handled represent a good standard for American practice. If heeded, the warnings about specific pitfalls in this chaotic field of medical practice will prevent many a moment of embarrassment to an unwary witness or technical expert.

The section on toxicology of over 600 pages is presented at a level that is workable in any good medical examiner's laboratory. The discussion of the problem of alcohol determination and the clinical correlation with degree of intoxication, with its temperate, objective approach, is the best that the reviewer has seen. The illustrations are well chosen and important, even though necessarily gory. The references are extensive and well selected.

—*CARL J. LIND, Col., MC, USA*

SURGICAL FORUM. *I. S. Ravdin*, M. D., Chairman. 752 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1954. Price $10.

This is a compilation of the papers presented before the surgical forum at the Clinical Congress of the American College of Surgeons in October 1953. The forum was originally designed as a session in which young surgeons could report on their research and investigations in the many fields of surgery. The sessions have been well received and each year a great deal of interest and attention is paid to this part of the meeting.

This edition is similar to previous ones in that it contains short, concise papers on a wide variety of surgical topics touching on most of the fields of surgical research and endeavor. In all, there are 148 articles written by a total of 385 authors. These articles are conveniently grouped into 10 sections, dealing with cardiac surgery; blood vessels and circulation; the lungs; the esophagus, stomach, and intestines; the liver and pancreas; burns and renal function; shock, nutrition, and electrolytes; wounds, infections, antibiotics, and anesthesia; cancer and steroids; and plasma expanders.

This book contains many excellent contributions to current surgical knowledge and is recommended reading for physicians in the field of research as well as for those in active surgical practice. In addition, each new edition should be procured routinely by every medical library.

—*DONALD W. MILLER, Comdr. (MC) USN*

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ORAL HYGIENE, by *Russell W. Bunting*, D. D. Sc. and Collaborators. 2d edition, thoroughly revised; 283 pages with 204 illustrations and a color plate. Lea & Febiger, Philadelphia, Pa., 1954. Price $5.50.

This book is devoted to the teaching of oral health, which here entails those clinical manifestations of the most common oral diseases and the methods by which such diseases may be prevented or treated, and the duties and services performed by the dental hygienist. It is Bunting's opinion that the basic concepts of preventive dentistry presented in this textbook should be of mutual benefit to both dental and dental hygiene students.

This new edition of this book, which has been thoroughly reorganized, is a compilation of the experience and knowledge of nine contributors. It is profusely illustrated and contains 12 chapters, nine of which are followed by a bibliography. The subject matter covered includes: Fundamental principles of oral hygiene, anatomy of the mouth and teeth, histology of the oral structures, physiology of the mouth, organic and inorganic accretions on the teeth, dental caries, periodontal disease, stomatitis, oral prophylaxis, role of the dental hygienist in public health, dental health education, and training and licensure of the dental hygienist.

That the authors had both the dental and dental hygiene student in mind at all times is evidenced by the clear and concise wording and the numerous illustrations. It is the reviewer's opinion that this text will be invaluable to both dental and dental hygiene students.

—*HUBERT B. PALMER, Lt. Col., USAF (DC)*

NUTRITIONAL FACTORS AND LIVER DISEASES, Edited by *Roy Waldo Miner*. 347 pages; illustrated. The New York Academy of Sciences, New York, N. Y., 1954. Price $4.50.

This publication describes biochemical research in experimental animals and co-ordinates these findings with the results of pathologic research obtained from humans with dietary diseases of the liver. As the proceedings of a conference in May 1954, it includes a valuable review of experimental pathology and an interesting summary of the etiology and pathogenesis of cirrhosis and primary carcinoma of the human liver. Investigations of experimental dietary diseases of the liver in North America and Europe, and the work in human nutritional conditions in Africa (kwashiorkor), Latin America, and Asia also are reported.

This monograph would be of considerable interest to the internist specializing in liver dysfunction, and to the graduate experimental biochemist. The presentation of current thought and experimental data was found to be most interesting from a definitive point of view of hepatic function. The conclusions to be drawn from this collection of research and reports indicate that more careful studies are necessary before the true relationship between experimental and human dietary liver injury can be ascertained. —*WILLIAM H. LEE, Maj., USAF (MSC)*

ORAL AND FACIAL DEFORMITY, by *C. Kerr McNeil,* Ph. D., L. D. S. 127 pages; illustrated. Pitman Publishing Corp., New York, N. Y., 1954. Price $5.

The title of this volume implies coverage of the entire field of oral and facial deformity, but the work is primarily a treatise on cleft palate of congenital origin. Only brief mention is made of acquired facial deformities. The volume limits its scope to the roles of the prosthetist and orthodontist and relates the author's experiences, results, and research in the field. The book consists mostly of case histories, which are brief, sketchy, and sometimes too inadequate to convey to the reader the problems involved. Although the photographs of the patients are good, those of the models and prosthetic appliances often are not shown in sufficient detail to clarify the technical procedures used.

The chapters concerning the historical data and etiologic factors are especially well presented. The author's success in closing palatal perforations and clefts through stimulation of the tissue by orthodontic and prosthetic measures, without resorting to operation, is a new procedure and warrants further investigation. His use of extra- and intra-oral appliances at an early age to shape the alveolar ridge is a valuable contribution to treatment of this condition.

This volume will be of interest to those concerned with the problem of the cleft palate, but will be of most value to the specialist treating patients with this defect by prosthetic means.

—*ROBERT B. SHIRA, Col., DC, USA*

THE BIOLOGY OF MAN, by *John S. Hensill,* Ph. D. 440 pages; illustrated. The Blakiston Company, Inc., New York, N. Y., 1954. Price $5.50.

This is an introductory college biology text which has a clearly outlined objective, "to present the major principles of animal biology as they apply to man." I believe the author has limited his audience unnecessarily; because the book so understandably and accurately introduces the subject, it should be greatly appreciated by the advanced high school student and the general public. The latter have been bombarded by much less readable and often inaccurate material.

The subject is presented orderly and accurately, with definitions of terms logically and clearly located. The life cycles of man and of lesser organisms are discussed from the cellular to the adult stages, and man is related to all plant and animal life in a comprehensive chapter. Another sequence of chapters pertains to anatomy and to the regulation, maintenance, and control of man, and describes how the body reacts to harmful disease agents.

The book is indexed adequately but references are few; in a classroom this may be overcome by supplemental reading assignments. The use of this type of book in educating and training personnel in the armed services is highly recommended.—*RICHARD E. OGBORN, Maj., MC, USA*

MODERN TRENDS IN DERMATOLOGY (Second Series), edited by *R. M. B. MacKenna*, M. D. 338 pages; illustrated. Paul B. Hoeber, Inc., New York, N. Y., 1954. Price $12.

This book, the second in a series begun five years ago, represents the combined efforts of 22 well-known contributors on 17 different subjects. The object of their collaboration is to present a summary of the more important advances in dermatology during the past five years. The subjects covered are divided into chapters on ecology in relation to dermatology; critical evaluation of psychosomatic medicine in relation to dermatology; cutaneous sensibility; physiology and functional pathology of the skin; blood factor in lupus eythematosus; cytodiagnosis in dermatology; tuberculous diseases of the skin; sarcoidosis; critical appraisal of modern trends in leprosy with particular reference to advances in immunology; current problems in cutaneous bacteriology; allergy in relation to dermatology; cross-sensitization phenomena; helminths and the skin, with special reference to onchocerciasis; recent developments in the use of antibiotics; cortisone and ACTH in dermatology; and Beta-ray therapy.

The text is well written and contains the best features from the articles reviewed. All of the articles are listed in the references at the end of each chapter. This work cannot be considered a text, but rather a source book and, as such, valuable to anyone interested in more extensive reading in any one of the subjects covered. While one may not agree entirely with the selection of subjects, careful reading is sure to be repaid by stimulation of thought and interest. It is recommended primarily for dermatologists. — *JOHN D. WALTERS, Comdr. (MC) USN*

A FORMULARY FOR EXTERNAL THERAPY OF THE SKIN, by *Chester N. Frazier*, M. D., and *Irvin H. Blank*, Ph. D. 118 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1954. Price $3.25

This formulary is now official throughout the Massachusetts General Hospital where it has proved adequate in all respects, according to the authors. It was devised in an effort to produce a simplified formulary for topical treatment of the skin. Such drugs as calamine, boric acid, phenol, antihistamines, and antibiotics are omitted, either because they are potentially dangerous or there is inadequate proof of their efficacy, or because, as in the case of antibiotics, they are more effective if given by routes other than topical. Internal therapy in dermatology, being outside the scope of the authors' subject, is not included in this formulary, although they do not decry its importance and necessity in many conditions.

Simplicity and rationality is the keynote. Tepid tap water alone is used for baths and compresses. Cleanliness of the skin is emphasized, and the use of detergents (plain soap or synthetic detergents) for this purpose is stressed when not contraindicated. About 14 active medications are used alone or in combination in various vehicles for all skin conditions.

The authors stress the importance of the physical-physicochemical properties of the vehicles used and provide an excellent chapter with diagrams explaining their properties. Some of the vehicles contain various emulsifying and wetting agents. Complete formulas of the vehicles and the names of the manufacturers of the less well-known ingredients are given. Principles of treatment are discussed and selected references are listed at the end of each chapter.

The formulary appears to be a step in the right direction to put local dermatologic therapy on a less esoteric basis and make it more applicable for general use. Most dermatologists would agree, however, that the list of topical active medications used is too simplified, omitting such valuable drugs as hydrocortone acetate, vioform, gamma isomer of hexachlorocyclohexane, and others that come to mind. The book is especially recommended for the nondermatologist interested in possessing knowledge of rational, simplified therapy for skin diseases.

—VINTON HALL, Comdr. (MC) USN

THE PSYCHIATRIC AIDE, His Part in Patient Care, by *Alice M. Robinson*, R. N., M. S. 186 pages; illustrated. J. B. Lippincott Co., Philadelphia, Pa., 1954. Price $3.

Because of increasing emphasis on proper care of the mental patient, this text for the psychiatric aide is a valuable addition to our present references on the subject. Many of the duties related to the care of mental patients cannot be classified strictly as "professional." The number of nurses trained in psychiatry is far from adequate, and the well-trained psychiatric aide can be used to good advantage in carrying out routine procedures and assisting in more technical responsibilities.

The material is presented in a simple, easily read and understood form for both the psychiatric aide and the student nurse. Each chapter is preceded by an introductory paragraph analyzing the feelings of a psychiatric aide as he gains new experiences.

The illustrations are the weakest part of the text. Many of the author's ideas could have been expressed more effectively. The appendix includes a list of references, definitions of terms used in the text, and a simple classification of mental illness.

—ANN M. WITCZAK, Maj., ANC, USA

THE DYNAMICS OF VIRUS AND RICKETTSIAL INFECTIONS, edited by *Frank W. Hartman*, M. D.; *Frank L. Horsfall, Jr.*, M. D.; and *John G. Kidd*, M. D. 461 pages; illustrated. The Blakiston Co., Inc., New York, N. Y., 1954. Price $7.50.

Thirty-three eminent investigators in the field of virus and rickettsial infections contributed papers to this symposium held at Henry Ford hospital in Detroit in October 1953. Customary topical boundaries based on taxonomy or host specificity were abandoned in favor of an outline based on dynamic concepts, and the various agents specifically mentioned in the papers served essentially as experimental vehicles.

Publishing the proceedings of a symposium is under any circumstances a trying task. The editors and publishers of this volume are to be congratulated for having produced an attractive, permanent volume, carefully proofread, with well-reproduced tables, charts, and photomicrographs with sufficient promptness to maintain the timeliness of the material.

"One of the chief objectives of the symposium," according to the statement of the editors, "was to provide an occasion for the exchange of ideas in information between workers in different areas of the virus and rickettsial field." Another objective, perhaps of greater importance, was also attained, because the symposium provides a suitable basis for a well-rounded concept of the biology of viruses and rickettsiae which can be stated in terms applicable to all living organisms.

The papers are divided into five groups: mechanisms of virus and rickettsial infections, ecology and pathogenesis, mechanisms of immunity, laboratory diagnosis, and approaches to prophylaxis and therapy. The contributions in the section on mechanisms of infection are of particular interest, especially at present, because they are new and less generally known, and have significant implications regarding inheritance, growth, errors of intermediary metabolism, host invasion, virulence, and other problems. The papers concerning the development and use of attenuated living vaccines, and the use of chemical prophylaxis and therapy, are of especial interest.

Many readers may find themselves in unfamiliar territory more than once in this book but it is stimulating and although not comprehensive, provides insight into current problems in the important field of virus and rickettsial diseases.—*JOHN K. SPITZNAGEL, Maj., MC, USA*

THE SCOURGE OF THE SWASTIKA, by *Lord Russell.* 259 pages. Philosophical Library, New York, N. Y., 1954. Price $4.50.

This book is an account of many of the German war crimes compiled from evidence given and documents produced at various war-crime trials, and from statements of eye witnesses. Lord Russell, as Deputy Judge Advocate General, British Army of the Rhine, was a participant in many of the trials and investigations and had access to the records in most of the others. The importance which this subject has for the author is attested by his decision to resign on 8 August 1954 as Assistant Judge Advocate General of the Forces in London rather than drop publication of the book.

The ill treatment and murder of prisoners and populace of occupied countries, slave labor, concentration camps, and the special treatment accorded Jews are described in this book. Under these headings we are told how, as Sir Hartley Shawcross put it, ". . . on the lowest computation twelve million men, women, and children were done to death.

Not in battle, not in passion, but in the cold, calculated, deliberate attempt to destroy nations and races, to disintegrate the traditions, the institutions, and the very existence of free and ancient States. Twelve million murders, murders conducted like some mass production industry. . . "

This appears to be a conservative factual account of the atrocities we have all come to associate with the Nazi regime. There are 28 illustrations with an adequate index and bibliography.

—*MARION E. ROUDEBUSH, Capt., (MC) USN*

GUIDE FOR SAFETY IN THE CHEMICAL LABORATORY. Prepared by and published for The General Safety Committee of the Manufacturing Chemists' Association, Inc., Washington, D. C. 234 pages; illustrated, 39 plates. D. Van Nostrand Co., Inc., New York, N. Y., 1954. Price $4.25.

This manual is compiled primarily for college, university, and industrial chemical laboratory staff members, student bodies, and coworkers; however, there are several chapters which apply to high schools and elementary technical training schools where chemical laboratories are in existence or where chemicals may be handled.

The book is concise. Mandatory procedures are set down using the word "must," while desirable procedures are set down using the word "should." This makes it easy for the reader to determine where some leeway in procedures is acceptable. The material is very well organized which permits quick reference to discussion of particular problems or hazards.

Excellent photographs of some of the most desirable features of modern industrial chemical laboratories with clear detail photographs showing proper methods of some operations are included. Adequate references are given in a separate section. I believe it would be desirable to include reference to the series of handbooks published by the National Bureau of Standards on the recommendations of the National Committee on Radiation Protection. These are a very desirable addition to the excellent chapter on radiation safety.

—*JOHN S. GEIL, Army Chemical Center*

THE TREATMENT OF THE ALCOHOLIC, by *Fritz Kant*, M. D. 130 pages. Charles C Thomas, Publisher, Springfield, Ill., 1954. Price $3.50.

Nothing is added to the knowledge of chronic alcoholism nor its treatment by this small volume. However, the author, a well-known psychiatrist, has given in a brief and concise form a worth-while summary of some of the problems confronting the therapist in alcoholism. The book is directed toward lay readers, although the physician and especially the general practitioner may well find it to be a useful guide in treatment. The author presents some of his personal viewpoints as regards treatment, and the chapter entitled "Psychotherapy" is of especial value.—*CHARLES T. BROWN, Lt. Col., MC, USA*

LECTURES ON THE SCIENTIFIC BASIS OF MEDICINE, Volume II, 1952-53, by British Postgraduate Medical Federation, University of London. 380 pages; illustrated; 29 plates. Published by the Athlone Press at the Senate House, London, w. c. 1, 1954. Distributed in U. S. A. by John de Graff, Inc., New York, N. Y. Price $6.

This volume is the second in a series devoted to presenting a review of the most recent advances in basic science in medicine in lecture form. The book is well printed but the placing of all the cuts in a section at the end of the book somewhat impairs its usefulness.

The current series of lectures is well selected and is guaranteed to stimulate the thinking of its readers. Because the earliest lecture was delivered in October 1952 and the most recent in February 1953, the data are recent enough to be news to most readers who do not keep in close touch with the literature of the basic sciences. Each of the lectures has been delivered by a recognized authority on the subject, and is complete in itself with adequate bibliographic references provided.

The book is recommended for any busy physician who is interested in keeping abreast of progress in fundamental research and in stimulating himself to thought about improvement in medical practice. The book should be of particular interest to students preparing to appear before specialty boards because it presents in easily assimilable form basic data which is of importance to every specialty in medicine.

—RYLE A. RADKE, Col., MC, USA

PERIODONTIA, Clinical Pathology and Treatment of the Periodontal Tissues, by *Edgar D. Coolidge*, M. S., D. D. S.; and *Maynard K. Hine*, M. S., D. D. S. 2d edition. 384 pages; 424 illustrations on 250 figures and 2 color plates. Lea & Febiger, Philadelphia, Pa., 1954. Price $7.50.

This concise text was written principally for dental students and general practitioners of dentistry as a reference to the fundamentals and the principles of treatment of periodontal disturbances. The book is well-organized, being divided into four major sections of 14 chapters: prevention and classification of periodontal diseases; treatment of inflammatory changes in the gingival and periodontal tissue; treatment of retrogressive changes in the periodontal tissues; and correction of occlusal disharmony and care of the oral tissues.

The illustrations are excellent and the captions are concise and clear in meaning. The general format is conducive to ease of reading. The book is not encyclopedic in scope and is obviously intended primarily as a teaching text and not as a reference book.

In the discussion of acute necrotizing gingivitis the recommendations for the use of caustics seems questionable, and insufficient importance is attached to the early débridement of the mouth in the treatment program. The discussion of the surgical method of pocket elimination is limited with reference only to the technic of gingivectomy.

This volume is a valuable addition to periodontal literature.

—SAM W. HOSKINS, Jr., Maj., USAF (DC)

THE CARE OF THE AGED (GERIATRICS), by *Malford W. Thewlis*, M. D. 6th edition. 832 pages; with 155 illustrations. The C. V. Mosby Co., St. Louis, Mo., 1954. Price $15.

This is the sixth edition of a general text covering all phases of medical management of the aged. In this day of increased longevity, one is a little taken aback by the statement that the practice of geriatrics begins when the patient reaches the age of 40.

Perhaps many sections could have been brought a bit more up-to-date. For example, liver extract is discussed in the management of Addisonian pernicious anemia. Terramycin is the most recent antibiotic found discussed in the text. In the management of hyperthyroidism no reference is made of I^{131} used as a diagnostic tool and particularly as it is used in the therapeutic management of the aged. Concurrently, conventional chemotherapy is omitted from the management of pulmonary tuberculosis. Rather, the author discusses somewhat extensively the use of collapse therapy.

In the management of syphilis, 720 mg. (1,200,000 units) of penicillin every three days for three or four injections is recommended. Many would believe that this is inadequate antisyphilitic therapy. No reference is found to the use of the Treponema mobilization test when syphilis is suspected. While benemid is mentioned in chronic gout therapy, no reference is made to its use in the acute attack. The advice for the elderly to restrict periods of reading to only five minutes and then to rest would seem to be a little impractical. Considerable discussion is given to foci of infection, perhaps somewhat out of proportion to the conventional thinking.

The author does not urge the use of oxygen early in myocardial infarction. In general, the discussion on nursing care in geriatrics is excellent. The instructions to physicians in the avoidance of myocardial infarction are excellent for everyone in the profession.

While in general the author fulfills his objective, it is believed that the reader would not feel satisfied by the newness of many types of therapeutic management. The book would perhaps fulfill a need for a great many physicians in general practice.

—*FRANCIS W. PRUITT, Col., MC, USA*

A MANUAL OF OTOLOGY, RHINOLOGY AND LARYNGOLOGY, by *Howard Charles Ballenger*, M. D., and *John J. Ballenger*, M. D. 4th edition, enlarged and thoroughly revised. 365 pages; 136 illustrations and 3 color plates. Lea & Febiger, Philadelphia, Pa., 1954. Price $6.

The fourth edition of this well-known manual is well organized into sections referable to the nose, pharynx, larynx, and ear. It is well indexed so that specific subjects are easily located, making the book an easy-to-use reference manual. The material is written in a style conducive to easy and pleasurable reading. Considering the brevity of the book, much information is available.

The sections on anatomy and physiology of the nose, ear, and larynx have been rewritten to include and summarize effectively new knowledge in these fields. The discussions of malignant neoplasms of the larynx, Ménière's disease, Bell's palsy, functional tests of hearing, and tracheotomy deserve special mention.

Because of the condensation of so much information concerning the clinical fields of otorhinolaryngology, it would be necessary for anyone concerned in the practice of this specialty, even as a general physician, to have more detailed references in his library. This is particularly true of the references to the treatment of various clinical entities, especially in the field of allergy.

The book is adequately illustrated by numerous, well-chosen, and meaningful diagrams and drawings. The authors have attained their objective of producing a handy reference manual for the medical student and general physician.—*EDGAR L. OLSON, Col., USAF (MC)*

THE MICROMOTIST'S FORMULARY AND GUIDE, by *Peter Gray*, Ph. D. 794 pages; illustrated. The Blakiston Co., Inc., New York, N. Y., 1954. Price $10.50.

The first half of this book is concerned with the making of microscope slides. The production of the various types of wholemounts, smear preparations, squash preparations and ground, paraffin, celloidin, and frozen sections are discussed in separate chapters. The general principles involved in each type of preparation and the directions for the preparation of typical ones are given. The text is concise and adequate, and the illustrations, either line drawings or drawings prepared from photographs, are well chosen and clear.

In the second part, 3,500 specific formulas and technics are arranged and classified into chapters devoted to preservatives, fixatives, dye stains, metal stains, solvents, mounting media, embedding media, and miscellaneous items (cements, varnishes, adhesives, injection media, cleaning reagents, et cetera). Within each chapter is a decimal division of its contents and each formula or method is assigned a decimal designation. Although this may seem cumbersome, essentially similar formulas or methods become logically grouped and are easily located. In addition, there is an extensive index. Brief general observations are made in each chapter, and the various groups or types of stains within the chapter are prefaced by a more extensive discussion of their use. Frequently, directions for use of a specific stain (a typical example of its general group) are given.

This well-printed and attractively bound book is recommended for use by both microtomist and microscopist and it would be of value in the library of any medical laboratory.

—*HUGH B. HOEFFLER, Lt. Col., MC, USA*

New Books Received

Books received by the *U. S. Armed Forces Medical Journal* are acknowledged in this department. Those of greatest interest will be selected for review in a later issue.

THE YEAR BOOK OF RADIOLOGY (1954-1955 Year Book Series); Radiologic Diagnosis, edited by *John Floyd Holt,* M. D., Professor, Department of Radiology, University of Michigan, and *Fred Jenner Hodges,* M. D., Professor and Chairman, Department of Radiology, University of Michigan; Radiation Therapy, edited by *Harold W. Jacox,* M. D., Professor of Radiology, College of Physicians and Surgeons, Columbia University; Chief, Radiation Therapy Division, Radiologic Service, Presbyterian Hospital, New York, N. Y., and *Morton M. Kligerman,* M. D., Associate Professor of Radiology, College of Physicians and Surgeons, Columbia University; Assistant Radiologist, Presbyterian Hospital, New York, N. Y. 432 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1954. Price $9.

PEDIATRIC DIAGNOSIS, by *Morris Green,* M. D., Assistant Professor of Pediatrics, Yale University School of Medicine, and *Julius B. Richmond,* M. D., Professor and Chairman of the Department of Pediatrics, State University of New York College of Medicine at Syracuse. 436 pages. W. B. Saunders Co., Philadelphia, Pa., 1954.

CIBA FOUNDATION SYMPOSIUM ON HYPERTENSION: HUMORAL AND NEUROGENIC FACTORS. Editors for the Ciba Foundation, *G. E. W. Wolstenholme,* O. B. E., M. A., M. B., B. Ch., and *Margaret P. Cameron,* M. A., A. B. L. S. Assisted by *Joan Etherington.* 294 pages; 73 illustrations. Little, Brown and Co., Boston, Mass., 1954. Price $6.75.

WORLD-ATLAS OF EPIDEMIC DISEASES, First of four issues of Part II, edited by Professor Dr. med. *Ernst Rodenwaldt,* under the Sponsorship of the Heidelberger Akademie Der Wissenschaften. 168 pages; 10 colored maps. Falk-Verlag, Hamburg 1, Germany, 1954. Price 40 Deutsche marks, plus extra charge for postage and packing.

WHEN MINDS GO WRONG, by *John Maurice Grimes,* M. D., Formerly Staff Member of the Council on Medical Education and Hospitals, American Medical Association; Author of "Institutional Care of Mental Patients in the United States." 246 pages. The Devin-Adair Co., New York, N. Y., 1954. Price $3.50.

DIAGNOSTIC ADVANCES IN GASTROINTESTINAL ROENTGENOLOGY, Selected Methods, with Clinical Evaluation, by *Arthur J. Bendick,* M. D., Director of Radiology, Beth Israel Hospital, New York, N. Y., 144 pages; 75 illustrations. Grune & Stratton, Inc., New York, N. Y., 1954. Price $6.

HANDBOOK OF RESPIRATORY PHYSIOLOGY, Respiratory Physiology in Aviation, edited by *Walter M. Boothby,* M. D., The Lovelace Foundation for Medical Education and Research, Albuquerque, N. Mex. 189 pages; illustrated. Air University, USAF School of Aviation Medicine, Randolph Field, Tex., Sept. 1954.

HOSPITAL FORMULARY OF SELECTED DRUGS, Including Statements on Actions, Uses, Side Effects, Dosage and Dosage Forms of Important Selected Therapeutic Agents, by *Don E. Francke,* Chief Pharmacist and Secretary of the Pharmacy and Therapeutics Committee, University Hospital, University of Michigan. 759 pages; illustrated. Hamilton Press, Hamilton, Ill., 1954. Price $5.

ECONOMY AND SOCIETY, by *Wilbert E. Moore,* Princeton University. 48 pages. Doubleday & Company, Inc., Garden City, N. Y., 1955. Price $0.85.

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